The Political Ecology of International Trade

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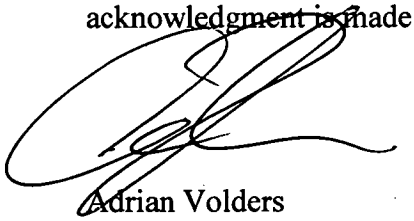

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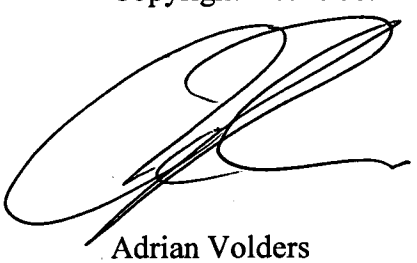

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This thesis has involved many years of hard work and dedicated scholarship. I wish to thank my beautiful wife Lisa for her unfailing support, even in hard times. During the writing of this work, our son, Alastair was born 3 months prematurely. Many thanks to him for living, being perfect and showing us the meaning of courage. My supervisor Peter Hay showed belief in me above and beyond the call of duty in allowing me the freedom to explore what I wanted and his support is greatly appreciated. Thanks must also go to all the authors and scholars who's work has greatly built our understanding of the trading system. At the heart of this thesis is the concept of freedom and thanks therefore go to all of those courageous individuals and groups who have voiced their dissent in countries where the freedom to trade is not matched by the freedom to talk.

Abstract

International Trade has become an all encompassing feature of the modern world. Trade across national boundaries now regularly involves the movement of harvested and manufactured goods, finance, information, services, and even the rights to emit pollution. Sustainable development can be considered the dominant framework for analysing the relationship between trade and the environment. This position is heavily influenced by neoclassical economics and involves an acceptance that growth and freedom in trade is necessary to achieve sustainability. Exploration of the mainstream framework finds it to be incomplete in that it fails to recognise the existence of power relationships influential in shaping investment, trade, environmental degradation and ongoing poverty. An alternative political ecology framework with the capacity to build on and critique the sustainable development position, and explore the wider political and economic issues involved in the trade and environment interface is therefore developed.

This thesis details a case study regarding the expansion of the pulp and paper industry in Indonesia to investigate the assumptions apparent in the sustainable development position and the wider issues suggested by the adoption of a political ecology framework. The research indicates that the environmental problems of poorer countries such as Indonesia are not just the result of domestic policy failure, but closely related to broader political and economic forces associated with global capitalism and trade. Increasing the permeability of

national boundaries to capital, companies and goods has unleashed global economic forces that systematically punish ecologically sound practices and initiatives while rewarding destructive patterns of behaviour. International trade increases the spatial distance between destructive behaviour and the end point of usage. It is the conduit through which many countries obtain the resources necessary for continued economic expansion beyond immediate geographic constraints and is a powerful homogenising influence on economies and cultures. International trade as it is currently practiced has significant political ramifications as it increases the power of wealthy states, markets, corporations and individuals. International trade should be recognised as a closely regulated system built on the uses of hegemonic power. Reformulating the rules of world trade by allowing countries to discriminate against goods which are produced in an unsustainable manner, ending subsidies and implementing cost internalisation and controls on capital flows would do much to mitigate the negative environmental consequences of international trade.

Contents

Chapter 5
Case Study: Expanding Indonesian Pulp and Paper Ventures, International Trade and the Environment

Chapter 6
Free Trade and the Environmental Assumptions of its Proponents

Chapter 7
The Environmental Effects of Trade Organisations, Trade Theory and Trade

Index of Tables

Index of Figures

Index of Graphs

Index of Diagrams

List of Acronyms

ADB	Asian Development Bank
APHI	Association of Forest Concessionaires
APKINDO	Association of Plywood and Panel Producers in Indonesia
APP	Asia Pulp and Paper
APRIL	Asia Pacific Resources International Holdings Limited
ASEAN	Association of South East Asian Nations
ASMINDO	Indonesian Association of Furniture Producers
CIFOR	Centre for International Forestry Research
CITES	Convention on International Trade in Endangered Species
ECF	Elemental Chlorine Free
EPA	Environment Protection Authority

EU	European Union
FAO	United Nations Food and Agriculture Organisation
GATT	General Agreement on Trade and Tariffs
GNP	Gross National Product
HKBP	Batak Protestant Church
IFC	International Finance Corporation
IIED	International Institute for Environmental Development
IMF	International Monetary Fund
ITCI	International Timber Corporation of Indonesia
ITTO	International Tropical Timber Organisation
LDC	Less Developed Country
MAI	Multilateral Agreement on Investment

MDC	More Developed Country
MNC	Multinational Corporation
MPI	Indonesian Forestry Society
NAFTA	North American Free Trade Agreement
NEES	New England Electric System
OECD	Organisation for Economic Cooperation and Development
PPM	Process and Production Method
PT TEL	Pt Tanjung Enim Lestari Pulp and Paper
PTIIU	PT Inti Indorayon Utama
RGM	Raja Garuda Mas
SAP	Structural Adjustment Program

SKEPHI	Sekretariat Kerjasama Pelestarian Hutan Indonesia (Indonesian NGO Network for Forest Conservation)
TCF	Totally Chlorine Free
TNC	Transnational Corporation
UN	United Nations
UNRISD	United Nations Research Institute for Social Development
WALHI	Wahana Lingkungan Hidup Indonesia (Indonesian NGO Forum for the Environment)
WTO	World Trade Organisation
WWF	World Wide Fund for Nature

-1-

Introduction

The Political Ecology of International Trade is a thesis which aims to investigate the relationship between an expanding international trading system and the environment from a new framework of analysis. Events such as the disruption of the World Trade Organisation summit in Seattle in October 1999 by a diverse coalition of environmentalists, trade unionists and farmers signify the depth of feeling and topicality of the issue and indicate the desirability of further study. My interest in this area of research was fomented during a period of employment in 1995 as a research assistant to Professor of International Business, Stephen Nicholas at the University of Melbourne. Research activities and discussions with the Professor, other faculty members and visiting international scholars, including some of the world's most influential trade economists, often focussed on the unparalleled benefits which could accrue to all areas of society through freeing trade. Having recently completed a Masters by Research which focussed in part on the

environmental effects of the export orientated aluminium industry in South West Victoria my dissenting observations invariably involved the possible negative consequence for the environment of free trade.

Credible and coherent refutations of my observations were always provided from within the doctrinal framework of neoclassical economics. Amongst the faculty and visiting scholars the dominant perspective was that increasing trade was environmentally beneficial rather than detrimental. Anecdotal evidence of the overwhelming belief in the environmental benefits of international trade collected from my time amongst the economists is supported by the relevant literature. 'Taken together Cropper and Oates (1992) and the World Bank (Low 1992) reviewed more than 30 papers on trade and the environment published prior to 1992, ... Agras et al (1994) reviewed more than 40 papers... Of all these papers, no more than five authors found trade and the environment to be adversely linked' (Chapman, Agras and Suri 1999 p.267). Economic debate has continued to be dominated by those who believe in the positive environmental benefits of trade, though there are several notable exceptions, such as Herman Daly. In the main economists have been able to continue to promote the benefits of trade, comfortable in the belief that environmental considerations form no basis for restricting the movement of goods across international borders.

The major goal of this thesis is to provide a detailed critique of this position. If traditionally a thesis is supposed to prove or disprove a hypothesis then mine will be that

the environmental benefits to be gained through freeing trade have been greatly overestimated by mainstream practitioners in the field of trade and the environment or, alternatively, that the environmental costs of freeing trade have been greatly underestimated by the same paradigms. The methodology adopted to accomplish an examination of this hypothesis is a simple and orthodox approach common to the humanities. The thesis consists of the synthesised insights gained from reviewing and interrogating material already, by and large in the public domain and is mainly a revisionist assessment that questions the standard line on the benefits of international trade. Sources of information were wide and varied and included academic literature, institutional reports and documents, media and pressure group reports, newsgroups, websites and direct email contact. Much of the information was found through searching databases and visiting archives at a variety of libraries both physically and through electronic means.

The University of Tasmania library was a major source of data. The University of Melbourne was also extensively used. Through the internet libraries across Asia, Europe and the United States were also visited. Institutional websites were an excellent source of information. The World Trade Organisation, World Bank, International Monetary Fund, International Tropical Timber Organisation, United Nations Food and Agriculture Orrganisation and International Institute for Sustainable Development amongst others were used extensively. Major corporations operating in the pulp and paper field and environmental group sites were also used.

Where possible information sources were cross checked to assess credibility. Intrinsic within this analysis was an attempt to look for the voice of the powerless in the international trading system. Inevitably questions regarding the credibility of groups speaking on behalf of these people could be raised as they often lack the training and financing to meet the strictures of modern academic convention. There is no easy answer to this problem and were practical the source of information and some explanation of its background is given. This is not to argue that only the credibility of the powerless is to be questioned as the powerful also hold their own biases and limitations which readers should be wary of. In analysing information for inclusion in the thesis, factual and checkable evidence where practical has been a major criteria for inclusion.

The inclusion of a case study of the expansion Indonesian Pulp and Paper Industry allows comparative analysis between local, industry, regional and international environmental impacts and issues. While the broader social, environmental and economic aspects were investigated and presented they were done so with a wider view of their part in a larger international system. This approach is in line with other works in the field of political ecology which focus on the fact that many local environmental degradation issues are closely related to forces associated with global capitalism. Political Ecology does not accept that environmental degradation affects rich and poor equally. Therefore searching for this differential impact in countries such as Indonesia which hosts extremes of wealth and poverty will be illuminative for the broader questions of the environmental impacts of the international trading system.

International Trade has become an omnipresent aspect of the modern world. While conventionally it is thought of as the movement of harvested or manufactured goods across borders it also encompasses the transmission of finance, information and services. Recent international agreements such as the Kyoto Protocol have again enlarged the sphere of trade by enshrining the concept of trading the right to emit pollution across international borders. While trade between nations has been conducted since antiquity, its most recent manifestations have been heavily influenced by neoclassical economic theory. The sudden and dramatic transformation of economic policy since the 1970s has been described as the triumph of neoclassical economics. In line with the major prescriptions of the paradigm, most nations and influential international organisations have adopted policies designed to liberalise trade and investment regimes, privatise state owned enterprises and encourage a variety of other economic reforms. This combined with new technologies for communication and transport means that economies, which were once separated by high transport costs and artificial barriers to trade, are now linked in an increasingly dense network of economic interactions.

Chapter two examines the globalising trade system, chapter three investigates the relationship between trade and sustainable development, while chapter four presents political ecology as a new framework of analysis. Chapter five presents a case study of the expansion of the pulp of paper industry in Indonesia. Chapter six explores the free trade paradigm and questions the assumptions made. Chapter seven examines the

environmental impacts of trade, while chapter eight examines the political ramifications of trade. Chapter nine is the concluding chapter.

Chapter two illustrates how the contours of the current international economic system have been heavily influenced by the ideology of the hegemonic power, the United States, which has consistently pursued the goal of a multilateral free trading system. The United States has used its structural power to lock other economies into an open world market in the expectation of benefits for American business and according to some analysts this has enhanced the power of markets over governments. International institutions such as the International Monetary Fund, the World Bank and the World Trade Organisation, established under the period of American hegemony, have constantly sought to continue freeing trade through a variety of methods such as conditional lending and negotiated agreements. Despite its long and torturous history of negotiations the World Trade Organisation has emerged as a powerful international body whose rules guide the flow of trillions of dollars of economic activity across international borders. The goals of the World Trade Organisation are to raise standards of living, ensure full employment, ensure large and steadily growing incomes and demand and to expand the production of and trade in goods and services. Critics argue that these goals are reflective of the dominant paradigm of sustained and unrestrained growth and that as such the World Trade Organisation favours the interests of large corporations over other societal goals such as environmental protection, workers' rights and cultural integrity.

Financial institutions and transnational corporations have expanded greatly to take advantage of new trading opportunities. The integration of financial markets has been achieved to the extent that trillions of dollars daily span the globe, effectively regulating national economies and business transactions. The past twenty-five years have seen a remarkable increase in the number of transnational corporations and in their control of the world's productive assets and their level of investment in the less industrialised world. A large and rising proportion of cross border trade no longer involves nationally based agents operating in open markets. Rather it occurs within transnational corporations and involves intra-industry transactions between firms integrated into worldwide production systems and hierarchies.

Many developments in the international economy are closely aligned to globalisation, which according to many definitions involves the loose combination of free trade agreements, new technologies and the integration of financial markets that are effectively undermining national borders and uniting the world into a single marketplace. While authors such as Hirst and Thompson (1996) insist that globalisation is a myth as the current international economy is less open than in previous periods and that genuine transnational corporations are rare, the majority of the literature emphasises the dominance of capital and the reduced role of the state.

The current era of economic globalisation is clearly differentiated from previous periods in terms of ecological impact. There is no area on earth that is not in some way polluted or

changed as a result of modern industrial trade related activity. Solutions promoted to cope with the associated environmental crisis increasingly include market-based instruments and are reflective of the influence of neoclassical economics in almost all areas of concern. Moreover defacto market rulers such as the International Monetary Fund, the World Bank, the World Trade Organisation and the major market players such as financial institutions and transnational corporations who are supportive of the free trade vision have developed powerful positions from which they can discipline countries financially. This effectively sets the parameters of environmental policy within nations and internationally to that which is acceptable to international commerce and impacts minimally on trade.

The concept of sustainable development, first promoted by the Brundtland Commission and affirmed at the Earth Summit in Rio de Janeiro, more than conforms to these parameters by arguing that revitalising the international economy through freeing trade is an important strategy in the quest for sustainability. Literature within the field of sustainable development and trade has been heavily influenced by the neoclassical framework and represents the mainstream position in the trade and environment debate. Chapter three gives a detailed overview of this position. For the purposes of this introduction it can be summarised as the perspective that lack of development as evidenced through poverty, underdeveloped markets and a lack of appropriate policies is at the heart of environmental degradation, and that the most effective way to tackle environmental problems is to encourage development. Free trade is presented as the

natural way to foster development as it will reduce market distortions and create the wealth necessary to end unsustainable patterns of production and resource use. In line with trade theory the position advocates economic and trade theory assumptions that gains accrue to all countries involved in trade and that flows of trade lead to flows of income. Moreover if each nation produces those things that make optimum use of their own resources and trades them to secure other needed goods then the optimum level of efficiency and income for all countries will be achieved.

Sustainable development therefore promotes an integrated global economy with the free flow of goods, services and finance theoretically resulting in rising living standards for all. It is assumed that rising living standards are associated with a reduction in poverty and the environmental degradation that accompanies it, and an increasing concern for environmental protection. Trade liberalisation allows developing countries to diversify away from a reliance on exports of primary commodities. Moreover, according to this position, open trading regimes tend to be associated with less distortionary and subsidised pricing policies and are more open to the spread of new technology, which is likely to be more environmentally friendly than that which it replaces.

Later sections of chapter three develop the argument that the trade related aspects of the sustainable development framework fail to recognise the existence of power relationships that shape investment, trading patterns and ongoing poverty. It is argued that sustainable development makes assumptions about many political and environmental issues regarding

international trade and the environment. For example it is assumed that international trade is an equitable process in which all participants and their environments benefit from trade. Issues such as whether or not trade is an exploitative process which will increase pressure on the resource base, or that globalising trade may simply magnify the processes of environmental degradation and may actually undermine moves toward a sustainable future in nations not dominant in the global economic sphere are not considered.

This analysis suggests that the closely related sustainable development and neoclassical frameworks dominant in analysing the trade and environment interface are incomplete. They provide little opportunity to analyse the negative environmental and political consequences of international trade and as such a framework of analysis capable of investigating such wider issues needs to be presented. The emerging field of political ecology is chosen as an additional framework because, unlike the sustainable development and neoclassical frameworks, this approach is capable of investigating the political sources, conditions and outcomes of environmental change.

Discussions of political ecology, presented in chapter four, highlight that it does not accept environmental degradation as affecting rich and poor equally; rather it seeks to explore the diverse economic, political and social forces operating at various levels to explain the differentiated impacts of environmental change. Political ecology attempts to build on the central questions asked by the social sciences. It seeks to unify two traditions, ecology with its examination of bio-environmental relationships, and political economy

with its focus on linking the distribution of power with productive activity. Establishing a link between political and environmental issues is achieved through acknowledging that all ecological projects and arguments are, at the same time, political-economic projects and arguments.

Chapter four recognises that the role of politics in shaping ecological outcomes is increasing. The political ecology literature focuses more on the political, rather than the ecological aspects of environmental change. Changes in society and technology have occurred to the degree that the hold of ecological processes on human affairs is considered to be in decline, as 'produced' nature becomes more prominent. Political processes are inevitably linked to environmental problems. Often it is only by political means that many problems will be realistically explored and solutions achieved. Furthermore increasing integration and growth in the global economy indicate that it is no longer feasible to treat ecology and international political economy as separate spheres of investigation. The institutions that oversee the global economy have the greatest ability to influence ecological outcomes. Adopting a political ecology approach suggests that attention paid to global practices, such as trade, will expose more about the process of degradation than an approach centred on interstate negotiations.

The fact that many environmental problems are the manifestation of broader political and economic forces associated with global capitalism is central to the political ecology approach. Bryant (1991) suggests that political ecology seeks to research the general

environmental impacts of the state and its policies, interstate relations, and global capitalism. Such research will help expose location-specific aspects of environmental change and its political ramifications.

A critical analysis of the relationship between international trade and the environment that embraces the research areas invoked by the sustainable development and political ecology frameworks involves the following questions. Are the assumptions made in mainstream sustainable development regarding the positive environmental benefits of international trade justifiable? What are the environmental effects of expanding international trade at the global and local level, and are environmental costs equally shared? What are the political ramifications of expanding international trade, including its effect on state, corporate and individual actions in relation to the environment? How does power manifest itself in gaining access to the environmental resources important in international trade? If the present conduct of international trade is incompatible with the goals of sustainable development what changes should be made to systems of governance and business practices? Each of these research areas is investigated in subsequent chapters of this thesis.

A case study of the expansion of the pulp and paper industry in Indonesia is used to explore many of these issues. Expanded analysis of this industry is used as it is reflective of economic development in line with conceptions of comparative advantage, the majority of production is exported, foreign capital has been a vital component in the expansion and

the industry has been promoted as an excellent example of the way openness in an economy can lead to positive environmental outcomes. Importantly the growth of the industry has been strongly influenced by international patterns of globalisation of fibre production, consumption and trade.

Evidence from the case study suggests that the growth in international trade in tropical timber products has created an extremely wealthy rent seeking class within Indonesia who wield significant influence over domestic politics and economic affairs. Wealth created through the export of products such as pulp and paper and the associated forest destruction have become a necessary component in the maintenance of the dominant political and economic regime. The case study also provides evidence of the way economic advantages gained through subsidies and corruption in one nation are often used by companies to expand export based forest industries into other countries.

The expansion of the Indonesian pulp and paper industry is indicative of the global relocation to secure cheap and plentiful resources. Over exploitation of forest resources and increased environmentalism in the Northern Hemisphere led to the search for new material sources. World Bank studies identified industry opportunities within Indonesia. International consultants have played an important role in planning projects and linking Indonesian elites who control forest resources with international paper conglomerates which offer technological and market capacity. Finance for the expansion of the industry

has come from a variety of public and private international sources. International corporations often own large percentages of the pulp and paper mills and act as operators.

The economic and environmental benefits of the expansion of the industry have been heavily promoted in a variety of fora. The World Bank uses the introduction of less polluting pulping processes than would otherwise have been used as an example of the benefits of open trading regimes. However the case study argues that the expansion of the pulp and paper industry within Indonesia will have serious environmental consequences within the archipeligo and across the globe. Increasing deforestation, loss of biodiversity and the pollution of important waterways are all likely outcomes. The large pulp and paper mills established are heavily indebted and consume vast amounts of wood daily. Failure in plantation establishments and high debt levels provoke added pressure to constantly open more forest for exploitation. People living close to the pulp mills have lost their traditional lands, with little or no compensation, and suffered the pollution of vital waterways. Traditional forest based cottage industries have been disrupted, increasing rural poverty and pressures on the forest resource. It is therefore concluded that demand for forest products such as paper in wealthy countries and decreasing barriers to trade increases the rate of forest destruction in Indonesia.

The remainder of the thesis seeks to use the case study materials where relevant to investigate issues raised through the adoption of a political ecology framework. Chapter six examines the assumptions made by mainstream sustainable development regarding the

benefits to be gained by freeing trade, many of which are grounded in classical and neoclassical trade theory. Classical economists Adam Smith and David Ricardo argued that trade could be beneficial to all parties involved if countries specialised in the production of goods in which they are the most efficient and traded internationally to gain needed produce. Ricardo's law of comparative advantage argues that the flow of goods between countries is determined by the relative, not absolute cost of goods produced. Thus a country has a comparative advantage in a particular product if it can produce it more cheaply relative to other products than can other countries. Neoclassical trade theory builds on this foundation to advocate that each country has a unique mix of capital, land, labour, management and technology that determines the products to be manufactured and traded. It considers free trade superior from a global economic standpoint as it maximises world output and represents the optimal division of labour. It recognises that the ability of the system to optimise the division of labour depends on the assumption of an absolutely liberal system of foreign trade. Free trade increases the size of the market served by specialised producers and allows potential economies of scale to be realised. The greater competition involved in free trade will drive technological innovation and the openness of trade will allow technological innovation developed in one country to be transferred elsewhere. Neoclassical trade theory argues that growth in individual nations can be shared globally through a system of free trade.

Advocates of the mainstream sustainable development position have expounded the benefits of free trade. Efficiency, specialisation, technological innovation, technological

transfer and economic growth are concepts with salience in the search for solutions to the ecological crisis. However the assumption that freeing international trade can achieve these outcomes without impacting on other important facets can be questioned. Ricardo's law of comparative advantage is based on the assumption that capital is immobile between countries. Modern economic practices see trillions of dollars shift around the system daily. Where capital mobility exists comparative advantage becomes less important as capital will flow to countries with an absolute advantage. Countries without such an advantage will face pressure on wages, working conditions, environmental regulations and other factors alleged to hinder international competitiveness.

International trade economists have argued that countries have different capacities to absorb or assimilate pollution. Similar to the climate or quality of soils this is considered a legitimate component of comparative advantage. On this basis pollution intensive industries can be encouraged to move to such countries to encourage growth and development. In essence this is the grow first, get rich, clean up later thesis presented in a more sophisticated manner. This position fails to recognise that environmental damage is often irreversible. Cleaning up later is impossible when biodiversity has been lost because of habitat destruction. Environmental pollution can cause considerable health costs which are increased when pollution control is delayed.

Chapter six also explores the relationship between sustainable development and modernisation theory, which is grounded in the virtues and promises of national

modernity achieved through industrialisation and an international system of free trade. Proponents of sustainable development argue that economic growth is necessary to alleviate poverty and that after a certain stage of growth, income becomes available to address environmental issues. The major evidence for this position is to be found in environmental Kuznets curves. Economist Simon Kuznets investigated the relationship between economic development and the distribution of income. He showed that as economies develop, inequality gets worse but then better. Environmental issues such as sulphur dioxide levels which conform to the same pattern have been used to support the deregulationist, free trade position. However the evidence provided by such issues is not convincing. Kuznets curves have not been found to exist for other important pollutants such as carbon dioxide. In any case the turning point for most pollutants it is likely to be above the income levels most developing nations can realistically expect in the future. There is no intrinsic link between economic growth and pollution control; effective policies are required.

Historical evidence linking global economic growth with poverty reduction is equally unconvincing. The global economy has nearly quintupled in size since the 1950s and the richest one fifth of humanity has dramatically increased its wealth. During the same period the per capita income of the poorest one fifth has increased only slightly. A section on World Systems Theory, with special attention paid to the expansion of the pulp and paper industry in Indonesia, is presented within this chapter. It illustrates how the wealth of core nations has been created at the expense of the periphery and that within the world trading

arena there are outright winners as well as losers. Later sections of the chapter explore issues of economic diversification, pricing regimes, cost internalisation, externalities and technology transfer in relation to trade. The chapter concludes that trade has led to environmental gains in terms of the adoption of less polluting technology. However, any such gains have to be balanced against the environmental damage caused by the ruthless quest for resource extraction, which has outstripped the ability of many states to monitor and control it. Only selected elements of the Rio agreement are being adopted. An open multilateral trading system is being achieved, while the corresponding requirement of sound environmental policies is languishing in most countries. This failure can be attributed to an extent to the competitive international trade agenda, which holds non-state intervention as a positive. Industries across the globe gain competitive advantage through lower environmental standards, and have actively sought such situations or manoeuvred to protect existing advantages.

Elements of the sustainable development agenda are environmentally beneficial. For example, conceptions of eco-efficiency can moderate some direct environmental impacts, but do little to question the fundamental causes of the environmental crisis such as excessive consumption in developed nations. Sustainable development is a growth based ideology, and its neoclassical theoretical foundations suggest that increasing global wealth through free trade will benefit all participants. This position fails to recognise the exploitative and competitive nature of the international trading order. The ever increasing web of complexity fostered by internationally specialised economies limits the possibility

of individual country action in environmental matters, especially if international competitiveness is to be maintained or trade regulations upheld.

Chapter seven seeks to document the environmental impacts that expanding trade, trade organisation and trade theory will have. It provides a brief overview of trade rules enforced by the WTO, particularly the concept of non-discrimination which was constructed to ensure that countries can exploit their comparative advantage. Trade rules decree that the environmental policies of exporting countries cannot be used to restrict trade in products, unless those products are the source of environmental harm in the importing country. Two infamous cases presented before the WTO, the Tuna Dolphin dispute and the Reformulated Gasoline case, are analysed and it is argued that these disputes represent a fundamental conflict between free trade and the environment. Trade is represented by a powerful institution in the WTO, however there is no international organisation capable of representing the interests of the environment. Trade rules have been used on numerous occasions to challenge a variety of government programs and practices as representing unfair subsidies. However trade officials have refused to recognise a lack of environmental legislation as a form of subsidy. WTO rules condemn the practice of dumping (introducing goods into the markets of other countries below their normal costs of production). The trade community refuses to accept that exports from countries which fail to include environmental costs are being dumped.

Chapter seven details how WTO rules restrict the rights of sovereign nations to exercise control over their natural resources via export controls. It argues that trade rules as they currently stand recognise few environmental limits to the extent of economic growth. The works of Smith and Ricardo have heavily influenced trade rules. Both appreciated the possibility of limits to growth within countries, however they believed the impacts of such limits could be minimised through new technologies and the opening of international trade. Given that they were writing when vast areas of the earth were still unexplored at the beginning of the industrial revolution, it is not surprising that that they did not focus on the possibility of global land shortages and the depletion of the earths resources. Evidence that global limits to growth unimaginable to Smith and Ricardo are now being reached and exceeded is bountiful. As such Daly (1993) argues the need for a change from an empty to full world economic paradigm. A full world economic paradigm would recognise that beyond some point in the accumulation of man-made capital, the limiting factor must become remaining natural capital. Countries seek to escape limits to natural capital by exploiting global resources and trading with nations willing to exchange their ecological capital. Thus trade makes it possible for some countries to live beyond their geographic carrying capacity. Evidence from the case study symbolises the way wealthy nations can preserve and even improve their natural environments through shifting the burden of resource exploitation to other countries through trade. International trade it is argued is a powerful homogenising influence across the globe. The case study shows the way the establishment of the trade orientated pulp and paper industry has led to the widespread destruction of tropical rainforests and their replacement with monoculture

plantations in Indonesia, whilst cottage industries within the forests of Indonesia have been displaced by multinationals, thereby decreasing economic and cultural diversity. Trade routes also provide a conduit for exotic species invasion and it can be expected that as trade increases so to will the incidence of bio invasion, with potentially dramatic ecological consequences.

Chapter eight of the thesis investigates the political ramifications of international trade. It examines the ways and forms power relations manifest themselves within the international trading system at the international, national, corporate and individual levels. It finds that in an integrated trading system the point of control over many vital resources is shifted away from communities which have traditionally controlled resources to global financial centres of influence. This is significant, as historically people were closer to the resources that they used and in a better position to monitor the overall assets on which they depended and in a position to change the destructive behaviour of resource users. This also indicates that international trade is a process conducted by economic and political elites. The outcomes of trade negotiations are indicative of power relationships. Transnational corporations have benefited greatly from the activities of the WTO. However developing countries have found it far more difficult for to have measures implemented which would protect them from the negative aspects of trade. The power of the WTO rests not just on its ability to impose sanctions to ensure compliance but in its non-decision making power. Proposed environmental legislation has proven particularly vulnerable to the influence of the non-decision making power of the WTO. Many proposals to protect the environment

have failed to reach the relevant decision making arenas because of uncertainty regarding their compatibility with trade rules.

Transnational corporations control a large and growing percentage of world trade. They are influential in virtually every aspect of the global production and distribution process and hold a privileged position in liberal democratic societies. Reductions in barriers to trade vastly increase the bargaining power of transnationals in relation to other actors within countries and in the international arena. Beside the ability to credibly threaten investment withdrawal, large corporations have many financial and organisational resources at their disposal which can be put to partisan purposes. A section of the thesis examines the emergence of corporate environmentalism, its impact on the earth summit and in subsequent debates regarding the trade and environment interface.

Operation of the global trading regulatory environment has decreased the power of states over environments within their control. Membership of the WTO compels states to ensure that environmental legislation is trade compliant. States have also suffered a loss of influence over import and export controls and can be disciplined by international markets through currency depreciation and capital flight. States might no longer set exchange and interest rates and globalisation has restricted government's ability to increase taxes, particularly on business. This in practice reduces state policy options to those acceptable to international business. Countries wishing to implement environmentally progressive legislation such as full cost internalisation or carbon taxes are hindered by the dictates of

international competition. Individual nations wishing to pursue such policies would likely suffer short-term financial loss despite the long-term environmental advantages. Hence there has been an increasing focus on seeking international solutions through treaties for perceived environmental threats. The political impacts of trade will vary across states. States with the capacity to threaten the conduct of open trade, to resist financial sanctions, and which have the national capability to influence transnational regulatory organisations such as the WTO have increased their power. Faced with the expanded power of these groups and developments within the international trade arena the relative power of poorer states has been eroded.

The democratic credentials of free markets rest on the idea of consumer sovereignty. The system operates according to the maxim of one dollar, one vote. What is produced in the global system is partially dictated by the buying preferences of consumers. However within the international market the majority of people have limited influence as they have limited financial assets and the divide between rich and poor is growing. There are few incentives to produce technologies to meet the needs of the poor or preserve the ecosystems that they rely on as they exert little market power. The case study illustrates the way paper intended mainly for wealthy computer users has been produced at the expense of indigenous populations. This is indicative of the market system's inevitable bias towards the needs and desires of the wealthy consumer over others.

Chapter nine, the final chapter of the thesis, makes several conclusions regarding the environmental impact of international trade. It argues that far from being neutral or promoting environmental solutions, trade as it is currently practiced is, in the main, highly detrimental to environmental outcomes. This chapter proceeds to identify ways in which the international trading system can be reformulated to reduce this impact.

-2-

Globalising World Trade: Paradigms, Patterns and the Environment

2.1 Introduction

International trade, the commerce conducted across national borders, is a complex field of study as it embraces countless products and services, numerous countries, firms and individuals engaged in an ever changing mosaic of relationships that affect economic fortunes throughout the world. Knowing where to begin an exploration of the international trading system is therefore a vexed question. In this chapter the neoclassical economic ideology that has legitimised and influenced trade expansion is initially considered before the changing nature of trade and the impact of a global economic hegemon on free trade described. The Bretton Woods institutions implemented under a period of American hegemonic ascendancy have played a vital role in the global spread of free trade policies and

spawned an era in which globalised capital investment and production techniques have proliferated. The extent of economic globalisation is highly contentious and this debate is examined before the impact of the dominant neoclassical economic paradigm on global environmental policy is considered.

2.2 Classical Economic Dogma and the Expansion of the Global Trading System

In his seminal 1962 work *The Structure of Scientific Revolutions*, Thomas Kuhn argues that a paradigm embodies a particular conceptual framework through which the world is viewed and described and generates a particular set of experimental and theoretical techniques for matching the paradigm with observable outcomes. Despite the fact that Kuhn himself may have argued that economics was in a pre science rather than normal science phase it is clear that the dominant 'science' based decision making paradigm within global economic circles is the neoclassical school of free market economics. Biersteker describes the sudden and dramatic transformation of economic policy in the 1970s and 1980s as the 'triumph of neoclassical economics' (1992 p.105). Courses in economics mainly focus on neoclassical principles and national treasuries and global financial organisations often base policy decisions within the ideological premises of the paradigm.

Prime amongst the neoclassical premises is the belief that the satisfaction of individual wants is to be supported as rational individuals are the best judge of their own welfare, and that the pursuit of enlightened self interest provides for the optimal social outcome. It is assumed that individuals, firms and even countries are essentially economically rational and will choose to maximise profits and minimise costs. The quest for profit in local, regional,

national and international markets is regarded as one of the major motives for economic and social development (Clements 1980). According to the paradigm the operation of a mature and open market system coordinating the exchange activities of individual economic agents can lead to economic and social harmony (Alec-Gee 1991).

Therefore a major policy prescription is non government intervention in markets. The influence of this school of thought can be witnessed through the implementation of privatisation policies and the deregulation of market economies through out the world. During the 1980s and 1990s countries began:

> restructuring the nature of their intervention in the domestic economy, liberalizing their domestic trade and investment regimes, privatizing state owned enterprises, and pursuing a variety of economic reforms more generally. Foreign restrictions have been eased and new investment incentives established in historic bastions of economic nationalism such as India, Nigeria and Brazil.... Comparable changes in economic policy are being undertaken on a global scale and cut across national boundaries, regional arenas, and previous ideological barriers. With the possible exception of Cuba and North Korea, one is hard pressed to identify countries in the world where the movement is currently in the other direction (Biersteker 1992 p.106-107).

One of the most widely accepted programs within the neoclassical paradigm and the subject under investigation in this thesis is that of the necessity of a liberal trading system based on the concept of comparative advantage developed by the founding classical economists Adam Smith and David Ricardo. The concept of comparative advantage can be defined 'loosely as the view that countries trade to take advantage of their differences' (Krugman 1987 p.132). This concept can be illustrated by contrasting two countries, one a developed nation with the technological and human resources required to manufacture automobiles but no oil resources, and a less developed nation without manufacturing capabilities but vast oil reserves. Automotive transport would not be possible without trade as neither would have access to both vehicles and fuel Trade between the two nations would allow both to make use of their resources (Goodman and Howarth 1997). This example exposes the reasoning behind free trade as a policy. Proponents of free markets argue that they are the most appropriate form of economic organisation because under idealised conditions they result in the optimal resource allocation, higher efficiency and increased welfare. Trade barriers in this view result in economic inefficiency and reduce welfare.

Classical economists such as Smith and Ricardo helped establish within the economics profession the conviction that free trade is superior to import protection in producing economic wealth. In many subsequent economic and social debates it has fallen on those proposing trade restrictions to establish how such policies would increase economic wealth (Irwin 1996). Modern economists largely support free international trade as a way of maximising economic welfare. A survey reported in the *American Economic Review* showed that 95 percent of economists surveyed in the United States supported the proposition that

"tariffs and import quotas reduce general economic welfare" (Frey *et al* 1984 p.986 quoted in Irwin 1996). Noted economist Paul Krugman argues:

> If there were an Economist's Creed, it would surely contain the affirmations "I understand the Principle of Comparative Advantage" and "I advocate Free Trade". For one hundred and seventy years, the appreciation that international trade benefits a country whether it is "fair" or not has been one of the touchstones of professionalism in economics. Comparative advantage is not just an idea both simple and profound, it is an idea that conflicts directly with both stubborn popular prejudices and powerful interests. This combination makes the defence of free trade as close to a sacred tenet as any idea in economics (Krugman 1987 p.131).

Economic ideology has been a central ingredient in persuading countries to adopt free trade policies. For example, during the height of liberalism in the mid-nineteenth century many European nations moved toward free trade for ideological areasons. Moreover, free international trade has constantly been linked to other policy goals. The 1950s movement in favour of free trade in Europe was premised on the conviction that trade could provide an obstacle to further wars and as a basis for political union (Boltho 1996). The insistence by the United States on a liberal trading order in the years since World War 2 had at least part of its origin in the battle against communism, and was an ideological position strengthened by America's dominance of a substantial portion of the world's free market economy. Throughout the 1980s and 1990s the United States sought to selectively open foreign

markets through retaliatory trade campaigns in an attempt to create a more advantageous environment for American corporations (Bello 1998). More recently the concept of sustainable development proposed in response to the environmental crisis has also been linked closely with the necessity of free trade.

2.3 The Changing Patterns of Trade

Developments in the global trading order over the past fifteen years would gratify most neoclassical economists and may initiate an era of free trade that for the first time encompasses a majority of nations[1]. Changes in economic policy and technology mean that economies which were once separated by high transport costs and barriers to trade are now linked in an increasingly dense network of economic interactions. On average world trade has increased by six percent per annum in the years since 1990, while it increased at less than four per cent per annum during the 1980s. World trade in goods in 1995 increased by eight percent in volume terms which was four times the growth in world gross domestic product (Dominique 1997). This suggests that the world is becoming more economically integrated through trade (Hoekman and Kostecki 1995). Moreover these figures suggest that comparative advantages in different countries are being exploited in international trade, fomenting growth and development in the global economy.

[1] The world economy has previously had two major periods of free trade expansion (the 1840s to the 1870s and the mid 1940s to the mid 1970s). These were followed by periods of protectionism after economic slowdowns (the years 1880 to 1913, the Great Depression and those following the oil shocks of the 1970s). The first episode of free trade began with a series of bilateral treaties aimed at tariff reductions and was largely limited to Europe. The revolution in transport and the simplification of currencies helped corrode protectionism. The next period of free trade expansion began with the dismantling of OECD trade barriers after the Second World War and was continued through multilateral reductions in tariffs. The second period of free trade was limited to the OECD area as most developing nations had switched towards policies of import

A reduction in trade barriers is influencing the changing pattern of global industrial production and the pattern of economic activities undertaken within national boundaries. The focus of industrial production is moving away from the United States, Western Europe and Japan to developing countries in Latin America, South East Asia and Eastern Europe. Many large western corporations now have more workers in poor, less developed countries than in rich ones (*The Economist*, 20 June 1998). Within the rich countries of the OECD the balance of economic activity is changing from manufacturing to services. In the United States and Britain the proportion of workers in manufacturing has shrunk since 1990 from around 40 percent to less than 20 percent (*The Economist*, 20 June 1998). Manufacturing is shifting from rich countries to developing ones whose comparative advantage in terms of cheap labour gives them a considerable advantage in many of the repetitive tasks required by mass production.

2.4 Hegemonic Stability Theory

Gilpin (1972) contends that expansion of international economic activity was dependent in the nineteenth century on the *Pax Britannica* and after 1945 on the *Pax Americana.* According to his analysis the pattern of international economic relations is dependent upon the structure of the international political system. States seek security as well as wealth and because power is essential for security and wealth is a means to power, powerful states will seek to structure international economic relations in a way that generates wealth and power

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substitution in the 1950s and 1960s while according to differing accounts the socialist block virtually withdrew or was excluded from the world's trading system (Boltho 1996).

for themselves. Therefore the distribution of power among states is a central factor in explaining the openness and stability of the international economy. The overwhelming dominance of one country is necessary for the existence of a stable and open world economy. Such a hegemon serves to coordinate and discipline other countries so that each can feel secure enough to open its markets.

Protectionism therefore emerges when there is no country willing or able to take up a leading role to ensure order, stability and free trade (Kindleberger 1973). In order to promote and sustain the openness of the system a leader must be in the position to give the long term needs of the system more weight than the short term needs of its own people when it comes to formulating international trade policy. Kindleberger (1973) argues that the Great Depression of the 1930's was long, deep and had such vast consequences because no leading country was able to take up the role of stabiliser. The United Kingdom was not able to operate effectively as a leader and the United States was reluctant to assume the role.

The postwar economic system is partly an outcome of the ideology of the hegemonic power, the United States, who desired the establishment of a multilateral free trade trading system for a variety of reasons. The basic contention that the promotion of an open international system of trade is related to the hegemonic distribution of power has remained influential in academic debate. According to this formulation declining US hegemony would result in the erosion of international economic liberalisation, as a decline of hegemony results in a decline in the openness of the system. Therefore the subsequent literature has tended to dispute the hegemonic status of the United States. The structural power of hegemons is based on the

control over raw materials, sources of capital, markets and competitive advantage in the production of highly valued goods (Keohane 1984). Therefore the signs of the decline of American hegemony can be seen in the decline of the US share of world exports, and of world GNP (Gross National Product). This conception assumes that power is derived from the productive resources held within the US territorial economy and once this is surpassed by other national economies the possession of advanced weaponry only forestalls inevitable eclipse (Keohane 1984)

The economic strength of the hegemon is based on the size, flexibility and mobility of its economy. Members of the declinist school are convinced that the US has lost and is still losing relative power, mainly to Japan but also to Europe, because their economies are catching up with or overtaking the economy of the United States (Strange 1996).

Other commentators contend that the United States should still be regarded as a hegemon. Webb and Krasner (1989) conclude that although 'there is some ambiguity about how the United States should be classified' it is still more economically powerful than other countries and is 'far larger than Britain was at the peak of her power in the nineteenth century' (1989 p.195 quoted in Strange 1996).

Debate regarding the relative hegemonic capabilities of the United States in regard to other nations fails to acknowledge that one of the main outcomes from the period of American hegemony and its associated structural power has been a shift in the balance of power from states to markets:

> The United States, using its structural power to lock European, Latin American and now Asian and African economies into an open world market economy, certainly intended to reap benefits and new opportunities for American business. What its policymakers did not fully intend - in line with literary traditions - was the enhanced power that this would give to markets over governments, including their own. This result may make many social scientists uncomfortable. They are accustomed to think of power as pertaining to someone, or some social or economic institution. But markets do not fit this conception. They are impersonal, intangible, not even necessarily to be found in one place. They do not have rational preferences and can behave unpredictably and in a perverse manner (Strange 1996 pp29-30).

Another reason why the distribution of power among nations is no longer seen as the sole factor shaping the operation of the world economy is the increasingly important role played by international institutions. While hegemony might be necessary for creating such institutions, once established they have the ability to become self supporting. Institutions such as the International Monetary Fund (IMF), World Bank and the World Trade Organisation negotiate agreements between states and punish violations of these agreements. The activities of these institutions in regulating the global economy and international politics increases stability and openness and decreases conflict. Under a global trade regime many institutions and political actors have varying degrees of influence. These

can be identified as the global market itself, some international organisations, TNCs and some wealthy states.

2.5 The Bretton Woods Institutions

Policies promoted by the World Bank and the IMF have been central in the global spread of free trade. Established as a result of the Bretton Woods negotiations in July 1944 the IMF and the World Bank formally came into existence in December 1945 as specialised agencies of the United Nations. The IMF was designed to supplement the world's inadequate gold supply through credit facilities and to promote the orderly adjustment of balance of payments (Evans 1974). The World Bank (formerly known as the International Bank for Reconstruction and Development) was established to direct long term capital to international investment in a steadier and more regular flow than private capital markets had previously provided (Evans 1974). The founding of the World Bank, IMF and proposed ITO were a collaborative effort between the victorious western powers who wanted avoid another Great Depression and prevent the spread of communism. The World Bank has grown substantially and it now lends over US$ 23 billion a year to over 100 countries. It is considered by most commentators as one of the most powerful institutions in the world (Casagrande and Welford 1997). The World Bank and the International Monetary Fund (IMF) control the economies of the more than 70 countries subjected to Bank or IMF dictated Structural Adjustment Policies (SAPs). SAPs have been imposed as a condition for loan rescheduling for acutely indebted countries. These programs, based on neoclassical economic principles, require countries to reduce public expenditure, cut wages, open up markets, privatise state enterprises and maximise export orientated production. When

complex and detailed tariff reforms have been considered necessary within countries the World Bank has often led the process. Some World Bank adjustment operations have focused on trade reform while the IMF has encouraged the adoption of market orientated policies to improve the efficiency of resource allocation and promote growth through the expansion of international trade (International Monetary Fund 1998). Trade policies are considered crucial to economic reform as:

> An open trade regime expands trade and investment options and allows countries to specialise in and export those products in which they have a comparative advantage. Trade barriers to imports result in the higher prices for imported commodities and cause inefficiencies as consumers shift to higher cost domestic substitutes or forgo use or consumption of products they would otherwise prefer. Import barriers also give rise to an anti export bias through higher costs to exporters, the impact on the exchange rate which tends to be more appreciated, and because import-competing industries tend to bid workers and capital away from would-be exporters or other potentially more efficient economic activities (International Monetary Fund 1998 p.3).

After World War 2 the US and the UK together with their principal allies regarded a wealthy capitalist world economy based on the sharing of resources and freer trading relationships as an essential component for the maintenance of peace. With the establishment of the IMF and the World Bank, trade was the remaining area of world-wide economic co-operation where no agreement had been reached. In the latter part of 1945 the United States put

forward a proposal for the creation of the International Trade Organisation (ITO).[2] The United Nations Conference on Trade and Employment held in Havana from November 1947 to March 1948 drew up a charter. While the charter for the ITO was being established, the governments that formed the prepatory committee negotiated to lower customs tariffs and reduce other trade restrictions among themselves without waiting for the ITO to come into being. The first tariff negotiating conference was held in Geneva in 1947. The tariff concessions resulting from this conference was embodied in a multilateral treaty known as the General Agreement on Tariffs and Trade (GATT):

> GATT was intended as an interim measure pending the formation of the ITO which was meant to supersede it. The ITO, however, failed to get off the ground. Of the 56 countries which participated in the Trade and Employment Conference in Havana, 53 signed the Charter, the US being prominent in its refusal to do so. Only one country subsequently ratified the Charter and plans for the ITO - certainly one of the UN's most ambitious proposals and one of particular importance to the developing world - were

[2] The aims of the ITO were: (i) promoting international commercial co-operation by establishing machinery for collaboration among member governments regarding the solution of problems in the field of international commercial policies and relations; (ii) enabling members to avoid recourse to measures destructive of world commerce by providing on a reciprocal and mutually advantageous basis, expanding opportunities for trade and economic development; (iii) facilitating access by all members, on equal terms, to the trade and raw materials of the world which were needed for their economic prosperity; and (iv) in general, promoting national and international action for the expansion of the production, exchange and consumption of goods, for the reduction of tariffs and other trade barriers and for the elimination of all forms of discriminatory treatment in international commerce, thus contributing to an expanding world economy, to the establishment and maintenance in all countries of high levels of employment and real income, and to the creation of economic conditions conducive to the maintenance of world peace.

abandoned in 1950. As a result of the failure to establish the ITO, the decision was taken to amplify and enlarge GATT

(Dolman 1981 p.169).

The ITO was never established as the US Congress refused to ratify the agreement (Hoekman and Kostecki 1995). The GATT has subsequently been through many rounds of negotiation which have successively added more and more member countries and reduced barriers to trade across the globe. Essentially the GATT was established to liberate international commerce and bring an end to trade wars. Its founders envisaged free trade between nations: a single and essentially private sector global market, unencumbered by border tariffs, quotas, or government subsidies. The intention was to foster international competition between corporations to facilitate global economic growth and efficiency. This has been expressed as the ideal of the "level playing field", where companies in different nations could compete on an equal footing (Buckley 1993). More recently the level playing field concept has been replaced by the distinction between the absolute, competitive and comparative advantage of nations which is explored and critiqued in chapter 6.

Table 2.1 gives a summary of the outcome of GATT negotiations.

Table 2.1: GATT Rounds and their Outcomes

Name	Year	Outcome
The Geneva Round	1947	More than 45,000 agreements negotiated, reducing tariffs on

		manufactured goods and some agricultural products.
The Annecy Round	1949	This round mainly admitted new members to GATT. The original members also negotiated an additional 13,000 tariff reductions.
The Torquay Round	1951	This round admitted numerous new members and resulted in some tariff reductions.
The Geneva Round II	1957	The round admitted new members and dealt with the admission of Japan. Several countries opposed the admission of Japan, arguing that its low wages would greatly distort trade. Under Article XXXV of the GATT charter, these countries were allowed to withhold trading privileges with Japan indefinitely. By the late 1960s most of these countries fully accepted Japan under the most favored nation status.
The Dillon Round	1960	Named after the US Secretary of Treasury, Douglas C Dillon, this round resulted in a 10 percent reduction in tariffs that had been imposed on US exports and other total world tariff reductions.
The Kennedy Round	1963	Regarded as one of the most successful rounds, the Kennedy round cut tariffs on non agricultural products by about 35 percent, affecting 80 percent of the dutiable products of the industrialised world. The round also made significant cuts in agricultural tariffs.
The Tokyo Round	1973	This round made minimal reduction in tariffs. The main result was to establish a new framework for future rounds
The Uruguay Round	1986	Initiated by the Reagan administration, the Uruguay Round achieved reforms to continue reducing tariffs and addressed the

		issue of non tariff barriers for the first time. Individual agreements were reached on free trade areas, agriculture, textiles and apparel quotas. The agreement also created the World Trade Organisation, which replaced the GATT in dispute settlement and as the forum for future negotiations.

Source Hoekman and Kostecki (1995)

Agreement was reached at the Uruguay Round to create the World Trade Organisation, in effect replacing the GATT in dispute settlement and as a forum for future negotiations. The WTO was established on 1 January 1995 and plays an ongoing pivotal role in the freeing of trade. It currently has one hundred and twenty six member states and shares many of the goals proposed for the original ITO (See Footnote 2). The WTO is located in Geneva and has a staff of more than 500 full time employees. While GATT (the agreement) created the World Trade Organisation at the Uruguay Round they are not the same. The GATT (the organisation) was not a recognised international organisation by international law. Moreover GATT (the agreement) dealt almost specifically with trade in goods while the WTO now covers trade in goods, as well as trade in services and intellectual property rights. The rules set by the WTO guide the flow of trillions of dollars of economic activity across international borders and its policies therefore influence the parameters for the formulation of environmental policies within countries.

The main functions of the WTO are to oversee the implemention and administration of WTO agreements, to provide a forum for negotiations, and to provide a dispute settling

mechanism. The goals of the WTO are to raise standards of living, ensure full employment, ensure large and steadily growing real incomes and demand and to expand the production of and trade in goods and services (WTO 2000). These objectives are to be achieved while allowing for the optimal use of the world's resources in accordance with the objectives of sustainable development, and while seeking to protect and preserve the environment (WTO 2000). The WTO also specifically mention the need to assist developing countries, especially the least developed countries, secure a growing share of international trade (WTO 2000).

The WTO aims to meet these objectives by reducing existing barriers to trade and preventing the formation of new ones. It seeks to ensure fair and equal competitive conditions for market access and predicability of access for all traded goods and services. This approach is based on two fundamental principles: the *principle of non discrimination* which requires that the goods and services of other countries be treated in the same way as national goods and services, and the *most favoured nation principle* which requires that if special treatment is given to the goods and services of one country, they must be given to all WTO member countries.

Cottier (1998) argues that while GATT was an agreement almost exclusively for the reduction of trade barriers, the WTO assumes a constitutional role in the world economy. This constitutional role occurs as the goal of dismantling trade barriers becomes recognised as being closely linked to other issues such as the environment, intellectual property, competition and labour standards. The WTO now has a committee that is considering the link between trade anad the environment.

More controversially Shrybman (1997) argues that trade negotiations have been conducted within a dominant paradigm of sustained and unrestrained economic growth. As such the outcomes reflect the interests of large corporations and exhibit a lack of concern about the impact of these commercial interests on other societal goals, such as environmental protection. 'If the WTO regime can accurately be considered an economic constitution for the planet, it is one that has been written almost entirely by, and for, transnational corporations' (Shrybman 1997 p.4).

2.6 Financial Institutions and Transnational Corporations

Financial institutions and transnational corporations have expanded greatly to take advantage of the new trading opportunities provided by successful trade negotiations. Amin and Thrift (1994) argue that 'it is particularly the global reach of finance which is striking today, as global money, in a variety of guises straddles across and regulates the world's national economies and business transactions' (p.2). In the mid 1990s estimates put the amount of foreign exchange dealing across the world at about US$1.3 trillion daily (Russell 1997). Technological process, not only in production, but also in communications (transportation and information technology) has facilitated wider and faster linkages between people and places. The integration of financial markets is regarded as perhaps the most remarkable manifestation of the information technologies (O'Neill 1997).

The emergence of the transnational corporation (TNC) as a powerful force and large stakeholder in the world economy has also created a challenge to the sectors of any country's

economy that are insular and increased pressure on all governments and institutions to continue liberalising trade:

> As firms increasingly see transnational production as necessary for their competitiveness and profitability, they are exerting more and more pressure on governments to provide conditions that will allow them to operate worldwide. This involves not only further liberalisation of international trade but also freedom of entry, right of establishment and national treatment, as well as freedom for international financial transactions, deregulation and privatisation (UNCTAD 1996 p.7).

TNC's are undoubtedly among the world's biggest economic institutions. Greer and Singh (1998) report that the 300 largest TNCs own or control at least one quarter of the world's entire productive assets, worth about US$5 trillion. 90 percent of TNCs are based in Western Europe, North America and Japan and control the operations of 207,000 foreign subsidiaries across the world (Greer and Singh 1998). For example, the Swiss electrical giant ABB has facilities in 140 countries and Shell explores for oil in 50 countries, refines in 34 and markets in 100. In 1970 there were approximately 7,000 parent TNCs while in 1998 there were more than 38,000 (Greer and Singh 1998). Changing global production and technology increases the pressure on corporations to take an international focus. Greater transnational mobility, which has made investing abroad cheaper and easier, along with major changes in production technology, transport and communications, has exposed firms with a purely national outlook to intensified competition from international firms.

There has been a great increase in TNC investment in the less industrialised world since the mid 1980s. Investments by TNCs and private bank loans have grown faster than national development aid or multilateral bank lending. Poorer nations suffering under high debt levels, low commodity prices and structural adjustment policies often view TNC's positively because of their ability to create wealth and jobs, and their access to technology, trade networks and capital. According to some authors the attraction for TNCs to invest in such countries is not only lower wages but also fewer health and environmental regulations than in the industrialised world (Greer and Singh 1998). In 1992 foreign investment into less industrialised nations was over US$50 billion, in 1993 it was US$71 billion, and it was US$80 billion in 1994 (Greer and Singh 1998).

The past decade has seen a large increase in Foreign Direct Investment (FDI) and an accompanying rise in the number of companies investing in foreign markets (Goodman and Howarth 1997). By 1992 the global stock of FDI generated about US$5.5 trillion in sales by foreign affiliates, surpassing world exports of goods and nonfactor services of $4 trillion. Trade links through the production and distribution networks of TNCs are considered "deep integration" in distinction to "shallow integration" through open exchange (Goodman and Howarth 1997). Goodman and Howarth (1997) estimate that between one quarter and one third of private sector productive assets in the United States and Japan are controlled by TNC and for the world as a whole this percentage may be one-third.

The success of multinational corporations and their domination of the trade arena indicates that defining "international trade" as if it involved the trade of commodities between discrete national agencies operating in open markets may no longer be appropriate (Goodman and Howarth 1997). As a high and rising proportion of international trade is not conducted at arms length through world markets, but is internalised within firms the ability to conceptualise the world economy as being made up of sovereign national economies and separate firms is rapidly being eroded (Goodman and Howarth 1997). The world's economic development is no longer based on the exchange of flows amongst national economic entities interacting and competing with each other. As such the concept of the international division of labour based on each nation's comparative advantage must also be questioned. As TNCs are internalising activities across international borders they inevitably impact on the sovereignty of nation states in terms of the formation of national regulations.

2.7 Globalisation

Many of these economic developments in the world economy are pivotal in the globalisation debate. Globalisation can be defined as the loose combination of free trade agreements, new technologies and the integration of financial markets which is erasing borders and uniting the world into a single marketplace. This integration intensifies competition.

> Globalisation and technological change are spawning new sources of competition, deregulation is changing the rules of competition in many industries, markets are becoming more complex and unpredictable and

> information flows in a tightly wired world permit companies to sense and react to competitors at a faster rate (Day and Reibstein 1996 p.2).

Many definitions of globalisation recognise the process as the establishment of a multiplicity of linkages and interconnections between states and societies. Most include a recognition of the way in which events, decisions and activities in one part of the world can come to have significant consequences for individuals and communities in other parts of the world. The United Nations Research Institute for Social Development (UNRISD) lists the six key trends of globalisation as being: the spread of liberal democracy, the dominance of market forces, the integration of the global economy, the transformation of production systems and labour markets, the speed of technological change, and the media revolution and consumerism (UNRISD 1995).

While many academic disciplines examine the effects of globalisation with their own paradigmatic interpretations it is economics which has most influenced the process. Simai (1996) takes a conventional economic approach when defining globalisation as:

> the entirety of such universal processes as technological transformation, interdependence caused by mass communications, trade and capital flows, homogenisation and standardisation of production and consumption, the predominance of the world market in trade, investment and other corporate transactions, spatial and institutional integration of markets, and growing

identity or similarity of economic regulations, institutions and policies (Simai 1996 p.7).

Cox (1987) takes globalisation in part to be an ideological instrument used by multinational corporations and banks in presenting themselves as agents of global economic development. According to his analysis globalisation is dominated by three contradictions: social polarisation within and among societies, the loss of regulatory power by states, and the tendency toward decomposition of civil society. While globalisation literature emphasises the dominance of capital and the reduced role of the state it has tended to disregard the fact that many governments under the influence of neoclassical supply side economics have stressed the benefits of the unregulated market and discarded many instruments of economic management. Correspondingly Sassen (1996) emphasises that deregulation has been a main element in reducing the regulatory capacity of the state. According to her analysis the regulation gap has been filled in part by the private sector which has created its own regulatory mechanisms such as security or bond rating agencies. Similarly Panich (1996) emphasises that states have been the 'authors of a regime that defines and guarantees through international treaties with constitutional effect, the global and domestic rights of capital' (p.85).

Hirst and Thompson (1996) argue that while increased internationalisation and integration have been taking place globalisation is largely a myth. According to their analysis there is nothing new about the present internationalised economy. Rather it is one of a number of distinct conjectures or states of the international economy that have existed since an

economy based on modern industrial technology began to be generalised from the 1860s. The current international economy is considered less open than the regime which prevailed from 1870 to the outbreak of the First World War. Moreover genuinely transnational corporations, it is argued appear to be relatively rare; most companies are nationally based and trade multinationally on the strength of a major location of production and sales. Capital mobility is not producing a massive shift of investment and employment from industrialised to developing countries. With the exception of a small number of newly industrialising countries the Third World remains marginalised in both investment and trade. Hirst and Thompson therefore conclude that the world economy is far from being global. Instead trade, investment and financial flows are concentrated in the triad of Europe, Japan and North America. These major economic powers have the capacity, especially if they coordinate policy, to exert powerful governance pressures over financial markets and other sectors of the economy.

Flows of trade between regions of the globe other than Europe, North America and Asia account for less than 0.5 percent of world trade (Hoekman and Kostecki 1995). However in the 1985-95 period developing countries have experienced real increases in trade flows that were on average 6 percentage points higher than real output growth (World Bank 1995). This and the fact that the large economies of Russia and China are becoming integrated into the world trading system and the expansion of TNCs indicates that this period of trade expansion is fundamentally different to previous historic conjunctures. Moreover the profound social, political and economic changes that have characterised the period between 1914 and the late 1990's indicates that the world is not: 'simply recovering from a trend of

global economic integration broken by two world wars and a perverse era of State management' (Bairoch and Kozul-Wright 1996 p.26).

While debate rages within academic circles regarding the reality of economic globalisation and the role of the global hegemon the vision of a coordinated yet deregulated global system of commerce based on the neoclassical concepts of specialisation and the division of labour remains a pivotal policy goal of many of the earth's most influential nations, institutions, companies and theorists. This vision, and its effect on the global environment and governance, is a central focus of this thesis.

2.8 Global Environmental Problems and Market Solutions

A brief examination of global environmental problems and their proposed solutions gives evidence for two of the major propositions put forward thus far. Firstly, there *is* an area in which international commerce is truly globalised and differentiated from other periods of economic globalisation and that is in its impact on the global environment. There is no area on earth that is not in some way polluted or changed as the result of modern industrial activity. For example Inuit people over a wide area from Greenland to Artic Quebec have seven times as many PCBs in their bodies as people living in industrialised parts of Canada. Through the process of global distillation the pesticide HCH is more than 100 times more concentrated in the waters of the Artic Beaufort Sea than in the Java Sea, near to the place where it is mainly used (Lean 1999).

As the international economy expands it increases pressure on the Earth's natural systems and resources to an extent never before witnessed. For example, from 1950 to 1997 the use of timber tripled, paper increased sixfold, the fish catch increased fivefold, grain consumption tripled, fossil fuel burning quadrupled, and air and water pollutants multiplied several times (Brown 1998). The economy continues to expand while the ecosystem on which it depends does not, creating an increasingly difficult relationship. Material demands in developed nations have increased pressure to exploit resources in all areas of the globe and the gradual decrease in trade barriers has helped facilitate this process.

Secondly, the proposals put forward to cope with the ecological crisis have increasingly included market-based instruments, thus reflecting the influence of neoclassical economics in almost all areas of concern. Rosewarne (1994) argues that 'environmental problems are represented as economic problems insofar as the impairment of the environment may obstruct economic development. Environmental management is then regarded as essentially a matter that falls within the province of the economist whose task it is to formulate policies that do not impair economic development' (p.54). Beder (1997), discussing the influence of neoclassical economics, argues that its most pervasive influence can be witnessed in the adoption in many countries of market based approaches to environmental problems. This has allowed the conservative, corporate agenda of deregulation, privatisation and the free market to be presented as a positive influence on the environment (Beder 1997).

The outcome of the third meeting of the Conference of Parties (COP-3) of the United Nations Framework Convention on Climate Change (UNFCCC) which concluded with the

signing of the ongoing Kyoto Protocol can be used as evidence for this position and adds an international dimension. After much political wrangling delegates agreed to a Protocol that mandates specific emissions limits for industrialised countries (collectively known as Annex A Countries) and economies in transition (collectively known as Annex B countries). A major component of the Kyoto Protocol is the provision of opportunities for emission trading between nations, a market based instrument designed to allow countries to meet their commitments more cost effectively than command and control policy approaches. The Kyoto target commitments represent an initial allocation of rights to emit, or emission quotas that can then be traded between countries. For example if the United States purchased emission quotas from the Russian Federation it would be conceptually equivalent to paying the Russian Federation to include some of the United States greenhouse gas emissions in its inventory. Kennedy *et al* encapsulate the dominant argument in favour of emissions trading when stating:

> Unlike independent action, international emissions trading allows more abatement to be undertaken in countries where the marginal cost of abatement is lowest, thus reducing the cost of Annex B compliance. If the marginal cost of abatement in a country exceeds the quota price, it is more cost effective for that country to purchase a unit of quota than to abate. Conversely, if the marginal cost of abatement is less than the price of the quota, it is possible to undertake the abatement and then sell the emission credit on the world market at a profit. These activities will occur until the marginal abatement costs plus marginal transaction costs are equalised across

abating countries and a quota price emerges which is equal to the Annex B marginal cost (Kennedy *et al* 1998 p516).

Thus the Kyoto Protocol is illustrative of the expansion of global trading logic into most areas of environmental concern. It reflects in part the business agenda of seeking the lowest cost market based trade solution with the potential for profit in the international arena that will impact minimally or even aid economic development.

2.9 Conclusion

Major global decisions concerning economic and environmental policy reflect the triumph of the school of neoclassical economics. The period of American hegemony has spawned a raft of international institutions which faithfully follow the paradigm and have given rise to the latest era of globalisation in which multinational corporations are a dominant force in international trade

While hegemonic literature concerning international trade has emphasised the state's dominant role, the newer globalisation literature is partly examining the hegemonic ascendancy of markets over states. The present juncture in history is a time when environmental problems are being tackled by states which have consciously moved away from market intervention for ideological reasons. In effect this means market based solutions or international treaties that impact on the competitive advantage of nations equally are often the only effective realistic compromise in terms of environmental policy but even these compromise positions can be undermined by the pursuit of trade objectives.

In practice trade liberalisation reduces the ability of national agencies to pursue social and environmental objectives through economic policy. Defacto market rulers such as the IMF, WTO and World Bank and the major market players such as financial institutions and multinational corporations have developed powerful positions from which they can discipline countries financially. The trend towards globalisation can be regarded as also concentrating power in the hands of a relatively small number of private sector firms (Goodman and Howarth 1997).

These developments help set the parameters of environmental policy within nations to that which is acceptable to international commerce. As the next chapter argues, the major response to the ecological crisis, sustainable development, certainly falls within these parameters and is supportive of the ongoing expansion of the international trading system.

-3-

Sustainable Development and International Trade

3.1 Introduction

Trade across national boundaries is emerging as one of the most important environmental issues of the new millennium. International Trade is a pervasive and distinguishing feature of the modern world and the environmental outcomes associated with trade activities will determine to a large degree the global ecological future. The worldwide expansion of economic activity has changed basic perceptions regarding the relationship between trade and the environment. Conceptions which regard national economies as islands of activity that transform materials from an unlimited resource base into useful goods have been undermined by the reality of globalising industrial and financial activity. Wealthy nations and corporations which dominate the world economy determine the direction of economic and environmental development on much of the planet through trade and investment. Resources used in one location are drawn from sources elsewhere in the world and the waste sinks of

the atmosphere, oceans, forests and rivers cross borders and spread around the world. Notions of sustainable development put forward by the United Nations, the World Trade Organisation and various business groups recognise the scale and interdependence of the global economy and the global environment and argue that reducing barriers to trade and investment is a vital precondition to sustainability.

3.2 Sustainable Development and International Trade

The origins of sustainable development can be traced back to the 1980 World Conservation Strategy and the 1972 Stockholm Conference. The concept of sustainable development gained standing in 1987 when the Brundtland Commission reported to the United Nations and argued the case for sustainable development. The notion of sustainable development was presented formally as development to meet the needs of today's people without compromising the ability of future generations to meet their needs (Sachs 1992). Sustainable development has become a central organising theme for development planners, commentators and bureaucrats (Adams 1993). During the 1980s and 1990s the phrase became widespread in the reports of international consultancies and the agencies. It became an accepted part of the dialogue of First World and Third World politicians, and was used extensively as a campaigning theme by environmental organisations (Rich 1991).

The United Nations now regards sustainable development[3] as a proper way to reconcile the competing claims of the environment movement and concern for economic growth,

[3] This chapter uses exclusively the 'weak' or 'economic' definition of sustainable development, that which accepts amongst other things, that the focus should be on economic growth rather than broader development,

particularly in the third world. The mainstream position was affirmed at the 1992 United Nations conference on Environment and Development in Rio de Janeiro, which was known as the Earth Summit. *Agenda 21*, the negotiated text from the Earth Summit, states that: 'an open multilateral trading system, supported by the adoption of sound environmental policies, would have a positive impact on the environment and contribute to sustainable development' (United Nations Conference on Environment and Development, Agenda 21, Chapter 2, Section B). *Agenda 21* argues that increased exports can provide the resources for strengthened environmental protection. Therefore sections of *Agenda 21* call on states to commit to trade liberalisation and specifically to complete negotiations on the Uruguay Round of trade discussions. A copy of the 27 principles agreed to at the Earth Summit is included in Appendix 1.

Agenda 21's conclusion concerning international trade's ability to contribute to environmental solutions is an affirmation of the findings of *Our Common Future* (1987), the text of the Brundtland Report, which argues that poverty itself pollutes the world environment:

> Those who are poor and hungry will often destroy their immediate environment in order to survive: They will cut down forests; their livestock will overgraze grasslands; they will overuse marginal land; and in growing

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and that trade-offs are made between economic activity and environmental quality. A dissenting 'strong' or ecological definition also exists. This strong version of sustainable development argues that ecological limits should be set on economic activity to avoid damaging critical capital. Jacobs (1999), Diesendorf (1997), and Daly (1993) all give excellent representations of this position.

> numbers they will crowd into congested cities. The cumulative effect of these changes is so far reaching as to make poverty itself a major global scourge (WCED 1987 p.28).

The image the poor caught in a continuum of poverty and environmental degradation has become firmly established in subsequent mainstream literature, and been accepted within development agencies such as the World Bank and International Monetary Fund (Bryant 1997). Later sections of this thesis question the link between poverty and environmental degradation.

The Brundtland Report argues that rapid population growth in some areas of the world could not be sustained by the available environmental resources, and was jeopardising the chances that everyone could be provided with housing, food, health care and energy supplies. Increasing economic growth and development are prescribed:

> Industrial countries seriously concerned with high population growth rates in other parts of the world have obligations beyond simply supplying aid packages of family planning hardware. Economic development, through its indirect impact on social and cultural factors, lowers fertility rates. International policies that interfere with economic development thus interfere with a developing nation's ability to manage its population growth. A concern for population growth must therefore be a part of a broader

> concern for a more rapid rate of economic and social development in the developing countries (WCED 1987 p.97).

Revitalising the international economy through freeing trade by reducing tariffs and subsidies is recognised as an important strategy in the quest for sustainability. Trade barriers in high-income countries have in many cases discouraged imports of labour-intensive goods and processed raw materials from low-income nations. The World Bank estimates that trade barriers in high-income nations costs low-income nations $US50 billion to $US100 billion in lost sales and reduced prices (Durning 1990). Trade barriers stifling employment growth in this way have resulted in population pressure on existing agricultural land. They have also forced people into previously forested land or to coastal areas where other environmental issues such as overfishing has become a subsequent problem. It is widely accepted that poor and desperate people over-exploit their resource base and according to Beder (1993) they are in many instances forced by the pressures of daily existence to cut down forests to grow food, to cultivate excessively steep slopes and to decrease fallow periods between crops. Furthermore subsidies granted to agricultural producers in some wealthy nations have:

> 'depressed world prices for products, increasing rural poverty in low-income countries. This means that farmers in low-income nations do not have the funds to invest in farm equipment, water control, integrated pest management and other measures which would make them more competitive and sustainable' (Beder 1993 p.168).

The enormous foreign debts owed by many poorer nations is considered a major barrier to sustainable development. Individual countries have experienced immense deprivations in attempts to meet their debt burden with decreasing per capita income as a major consequence. In the 1970s and early 1980s major banks made many: 'loans to low income countries with little concern for their ability to make repayments or how the money was spent' (Beder 1993 p.177). An unanticipated rise in interest rates and declining commodity prices placed many poor countries in a 'debt trap' (Beder 1993 p.177). Accordingly some of the poorest nations in the world now 'owe more in debt repayments and interest than they earn in exports each year and they have to borrow even more money to repay their existing debts' (Beder 1993 p.177).

A substantial percentage of the loans was siphoned away by corrupt officials and politicians in dictatorial regimes, or was wasted on expensive and unnecessary projects and as such did not reach the people and projects most in need (Carley and Christie 1992). Corruption combined with unproductive and inappropriate investments have minimised the value of loans and contributed to difficulties in debt servicing. In the mid 1980s the customary flow of capital from North to South was reversed. Poor countries in many instances now pay more in interest and principal than they receive in return in aid and new loans (Carley and Christie 1992). The growth in the debt burden has imposed a heavy cost on the natural environments of low-income countries. The requirement to earn foreign exchange for debt servicing has often been met through exploiting natural resources and boosting cash crop earnings and this has been a driving factor in the overexploitation of land and destruction of forests. The misuse of loans on corrupt dealings and other projects which have produced

few productive returns has impacted considerably on the income available for sustainable development and environmental protection.

Developing nations' reliance on the exploitation of natural resources also poses a problem for environmental management:

> agriculture, forestry, energy production and mining generate at least half the gross national product of many developing countries and account for even larger shares of livelihoods and employment. Exports of natural resources remains a large factor in their economies, especially for the least developed. Most of these countries face enormous economic pressures, both international and domestic, to overexploit their resource base (WCED 1987 p.6).

One of the challenges of sustainable development has therefore been perceived as to initiate a 'new era of economic growth for nations in which the majority of people are poor' (WCED 1987 p.8). Growth in many developing countries is being stifled by depressed commodity prices, protectionism, intolerable debt burdens, and declining flows of development finance, therefore 'if living standards are to grow as to alleviate poverty, these trends must be reversed' (WCED 1987 p.17). Later, and in much the same vein, the report argues that:

> if large parts of the world are to avert economic, social and environmental catastrophes, it is essential that global economic growth be revitalised. In practical terms, this means more rapid economic growth in both industrial and developing countries, freer market access for the products of developing countries, lower interest rates, greater technology transfer, and significantly larger capital flows, both concessional and commercial (WCED 1987 p.89).

A new type of growth is advocated, one that is sustainable, environmentally aware, egalitarian, integrative of economic and social development, material and energy intensive and more equitable in its impact (WCED 1987 p.52).

Thus a core assumption underlying international documents such as *Our Common Future* and *Agenda 21* is that economic growth spurred by trade liberalisation will result in positive environmental outcomes. Environmental destruction is not the outcome of free trade but rather lack of trade and of trade barriers that distort national and international markets, resulting in negative environmental consequences. Renato Ruggiero, the director of the World Trade Organisation, encapsulates this position when arguing that: 'debate starts with recognising - and reinforcing - the inherent link between economic growth and the advancement of environmental, social, and ethical goals; a link which is central to the idea of sustainable development' (Ruggiero 1997 p.2). Trade, it is argued, is a powerful engine of economic growth, whilst economic growth is vital to creating conditions which favour advancing environmental protection, improving social conditions, or sustaining ethical values: 'by opening markets, particularly to exports from developing countries, and by

keeping markets open through clear and enforceable rules, the global trading system is a natural ally of sustainable development' (Ruggiero 1997 p.2).

Concern for sustainable development initially arose from the growing judgment that a planetary increase in production and consumption to meet the expected several fold increase in demand was unsustainable. The need for altered production and consumption patterns and a reallocation of resources had to be undertaken collectively and addressed equitably. Negotiating parties at the Rio conference agreed that this would require an open, equitable, secure non-discriminatory and predictable multilateral trading system. Many countries feared that environmental measures would be used as protectionist devices which would further frustrate economic growth. Rio Principle 11 argues:

> States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries (*Agenda 21*, Principle 11).

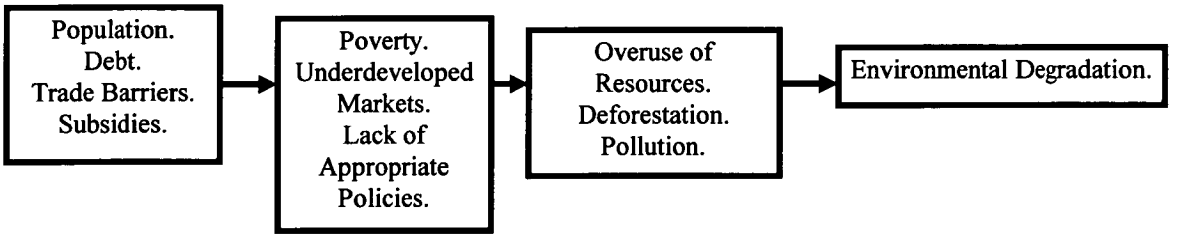
Thus in the Rio model of sustainability all countries would enact legislation which reflected their own priorities, transborder environmental degradation would be minimised through international consensus and no countries would discriminate against producers with low environmental standards through trade measures. The agreement recognises that differences

in natural environment endowments and labour supply contribute to the competitive advantage of nations. Trading these advantages in the global marketplace will lead to economic growth which will aid development and lead to policies and practices such as cost internalisation and institutional capacity building which are consistent with sustainability. This reflects the standard neoclassical position that the case for free trade is not weakened by environmental considerations, provided appropriate policies are implemented within nations to address environmental issues.

3.3 Modelling Sustainable Development

Mainstream sustainable development can be classified as free market environmentalism in that it argues that lack of development as evidenced through poverty, underdeveloped markets and lack of appropriate policies is at the heart of environmental degradation. The most effective way to tackle environmental problems is therefore to encourage economic development. Figure 3.1 presents a linear simplification of this position.

Figure 3.1 The Free Market Environmentalism Model of Environmental Degradation



Free trade is presented as the natural way to foster development as it will reduce market distortions and create the wealth necessary to end unsustainable patterns of production and resource use. Free trade environmentalism adds an environmental dimension to the traditional development path but does not allow that dimension to alter the general thrust of growth. It is a treatise on the environment that matches the aims, objectives and aspirations of the global economy (Welford 1997). This approach casts economic growth in entirely positive terms. Only through economic growth will communities have the resources to devote to environmental protection. Growth is regarded as more likely to contribute to a clean environment than stagnation (Smith 1992). From this perspective there is little need for either the free market or free trade to consider externalities such as the social and environmental costs of economic growth. Rather, as the economy grows, so will its capacity and the willingness of society to resolve the resultant problems.

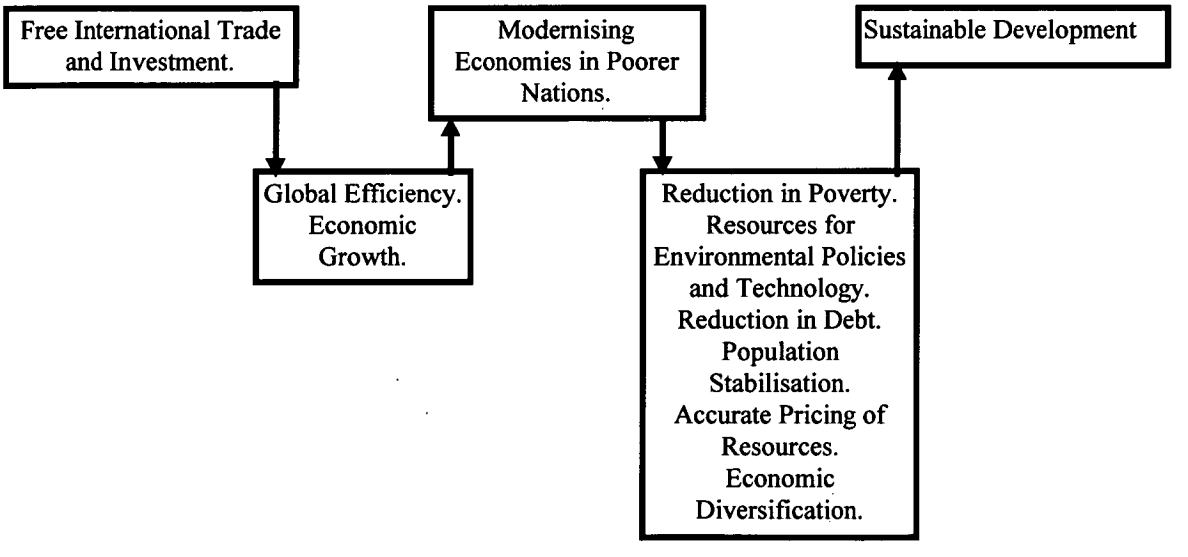
Examples of free market environmentalism prescriptions now abound in literature regarding industrial development and the environment. The Business Council for Sustainable Development argues that economic growth in all parts of the world is vital to eliminate poverty, sustain growing populations and reduce pollution. Open markets offer a way to improve living conditions as they foster innovation and efficiency (Schmidheiny 1992). The free market environmentalism approach supports the present institutional framework and regards the use of private capital as the main instrument for change (Schmidheiny 1992). The mainstream conception of sustainable development can be regarded as being firmly situated firmly within the paradigm of continued capitalist economic growth and offering virtually no critical appraisal of that paradigm (Adams 1993).

This position advocates economic and trade theory assumptions that gains accrue to all countries involved in international trade and that flows of trade lead to flows of income. Therefore deregulating international trade is an important precondition to sustainable development. If each nation produces those things which make the most valuable use of their own resources and purchases other requirements by exchanging some of these products for imports, the total level of income possible for all countries concerned will be increased. Free trade therefore enables each country to maximise output for a given input of resources, which is considered a movement in the direction of environmental sustainability (eco-efficiency).

It is understood that consumers fully express their environmental preferences through the marketplace and that industry responds to these preference in a competitive manner. The functioning of the World Trade Organisation provides an international set of rules to ensure that this response can operate on a world scale. Therefore if the supply of a resource is expected to decrease globally this will be reflected in its price. Price signals determined by competitive forces can encourage a change in the present rate of use. Open trade between nations theoretically ensures that global demands on resources influence global price. A protectionist system by contrast is considered more likely to mean that resources will be highly valued in some countries but used for low value purposes in other countries (Marsh 1994).

Thus sustainable development envisions "one world" integrated through the global economy. The free flow of goods, services and finance between nations will raise living standards. This approach accepts that rising living standards are generally associated both with a reduction in poverty and the environmental degradation that accompanies it, and also with an increasing concern for environmental protection. Trade liberalisation with its focus on reducing barriers to manufacturers and service providers gives developing countries the opportunity to diversify away from an excessive reliance on exports of primary commodities. Countries adopting an open trading regime are also considered more likely to implement other economically liberal policies such as non-distortionary pricing policies. As such prices for natural resources such as water, timber or energy are less likely to be subsidised. An open trading regime is also likely to attract new investment and accompanying technology advancement which is more likely to environmentally friendly than that which it replaces (Brack 1995). Figure 3.2 presents a linear simplification of this conception of sustainable development.

Figure 3.2 The Free Market Environmentalim Model of Sustainable Development



3.4 The Limitations of Mainstream Sustainable Development

Sustainable development research has advanced the understanding of the need for incremental economic and social change. Free trade proponents advocate internationally deregulated economic growth as this will ensure more equitable outcomes for developing nations and allow them to outpace their environmental problems. Environmental costs and pressures associated with economic growth such as, increased demands for energy and raw materials, expanding pollution and resource depletion are not considered (Adams 1993). The Brundtland Commission's conclusion that the international economy must speed up while respecting environmental constraints contains little informative detail of how this equilibrium is to be achieved. This illustrates the point that sustainable development does not give priority to environmental concerns but rather seeks to incorporate environmental assets into the prevailing economic system:

> Sustainable development encompasses the idea that the loss of environmental amenity can be substituted for by wealth creation; that putting a price on the environment will help us protect it unless degrading it is more profitable; that the 'free' market is the best way of allocating environmental resources; that businesses should base their decisions about polluting behaviour on economic considerations and the quest for profit; that

> economic growth is necessary for environmental protection and therefore should take priority over it (Beder 1994 p.8).

Moreover, the mainstream sustainable development paradigm is rarely informative about the politics of ecological change. 'The political dimension typically is ignored and ecology de-politicised' (Bryant 1991 p.164). The depoliticised nature of mainstream sustainable development can be observed through its focus on poverty as the central factor influencing environmental problems. This perspective implies that the poor are mainly responsible for the diminishing quality of the environments which they inhabit. Moreover: 'these allegations are the basis for policies that further threaten the viability of traditional social groups and production systems: Their inability to modernise is identified as the cause of the social and economic backwardness in rural areas. Even in the most enlightened societies blaming the victim for their own plight and lack of progress is a common phenomenon' (Barkin 1998 p.5).

This position has several faults. Primarily it is deterministic and makes no attempt to distinguish the poor by race, class or gender (Bryant 1997). Most importantly it limits the need to search elsewhere for others responsible for environmental degradation. Elites control most of the global productive resources and their role in environmental degradation is not considered. Poverty is regarded as:

> an attribute of the poor that occurs naturally and which can only be rectified through economic development. This view fails to relate poverty to historical

> processes, notably during the colonial era when pre-colonial political and economic structures were often transformed by the colonial powers as part of the integration of hitherto 'backward' regions into a globalising capital system. Additionally, it does not connect poverty to political and economic interests that may perpetuate such poverty today (Bryant 1997 pp 2-3).

Neo-Marxist dependency theorists argue that the continued lack of development in poorer nations is an inherent consequence of the functioning of the global capitalist system. Poor nations on the periphery of the global economy are systematically plundered of resources which are repatriated to the richer nations at the core of the system. This leads to development at the core and underdevelopment of the periphery (Schuurman 1993). Multinational Corporations play a key role in this process by (1) transferring capital through pricing systems; (2) outcompeting national capital; (3) imposing a universal consumption pattern without taking local needs into account; (4) using capital intensive techniques in areas with large labour surpluses; and (5) involving themselves in national political and economic affairs through their relationships with the local elite (Schuurman 1993). Thus dependency theory contends that penetration of bank and industrial capital and a consumption ideology alienates the periphery from itself and makes it dependent on the core. This leads to large-scale marginalisation and the non-realisation of development potential.

From this perspective it is possible to argue that mainstream sustainable development fails to recognise the existence of power relationships that shape investment, trading patterns and

ongoing poverty or even that the status quo that sustainable development seeks to build upon is the outcome of political interests and struggles. The prospect that both poverty and environmental degradation may be associated with economic development in a globalised system is not considered. Increasing global economic growth may strengthen the hold of processes of poverty and environmental degradation that sustainable development seeks to defeat (Bryant 1997).

> The paradox we face is: how do we help the poor if their survival is repeatedly put at risk by those who say they wish to help them, but whose primary concern is capital accumulation and the exploitation of raw materials? There exist a far reaching force of importing alien models of consumption and behaviour - in sum changing indigenous cultures - with no purpose other than foisting the western market model on these people or to make these people useful tools for enriching others (Nagpal and Foltz 1995 p.169).

Ekins et al (1994) raise a closely related question concerning the distribution of the benefits of international trade. They argue that the major beneficiaries of expanding trade are transnational corporations and urban elites in developed and developing countries, while the costs of environmental degradation adversely affect the working poor. Essentially poorer workers are asked to accept employment (benefit) in exchange for reduced environmental amenities (cost) (Goodman and Howarth 1997). Seeking a balance between these costs and benefits produces complicated economic and ethical dilemmas and it cannot be considered

appropriate to assume that workers as a group will be better of through trade liberalisation (Goodman and Howarth 1997).

Sustainable development assumes that states will support environmental policies corresponding with their level of development. Many states have shown concern for ecological issues by incorporating environmental criteria into the planning process. However the fact that a state is overtly sensitive to environmental issues does not prove it is committed to changing basic political and economic practices. Government and business elites deriving power from processes contributing to ecological degradation are often opposed to any changes that may threaten their power or wealth. Pressure for better environmental measures from international forces such as conservation agencies or the media may be deflected by elites by providing the facade of reform (Bryant 1991).

States wishing to implement processes of sustainable development still face difficulties. According to Bryant (1997) a state's 'structure and historical development may militate against effective action. This weakness is particularly important where ecological issues, typically embracing a wide variety of policy areas and actors, are concerned' (p.165).

The expansion of international trade and investment and the reduction of border controls advocated under sustainable development may also limit the effectiveness of state action in terms of the environment. The massive flows of speculative currency trading that have been encouraged by financial deregulation can significantly devalue national currencies. The Indonesian currency crisis in 1997 saw the Indonesian rupiah suffer an eighty percent

depreciation against the U.S. dollar (Friend 1998). This has had important ramifications on debt repayment, national economic development policies and social cohesion and is therefore at odds with the goal of sustainable development.

Expanding capitalist integration of the world market can also limit national environmental initiatives to those policies which are considered to have the least effect on international competitiveness and trade. Environmentalists have expressed disquiet that environmental safeguards may be diluted as industries are challenged by foreign industries with lower standards or even that investment and jobs will flow to countries with lower standards (Barry and Sims 1994). World trading rules allow countries to safeguard their own environments but not to protect their industries from countries that do not. Therefore it is argued that in this situation only countries with the strongest economies can pursue policies of environmental protection and that even these efforts will be continually attacked by those who consider international competitiveness to be of the utmost importance (Costanza *et al* 1995).

In a deregulated international system institutions and companies have the choice of where to invest and this can influence the type of policies adopted by individual countries: 'in a capitalist economy the level of economic activity is largely determined by the private investment decision of capitalists. This means that capitalists in their collective role as investors have a veto over state policies in that their failure to invest at adequate levels can create major political problems for state managers' (Block 1977 p.44). Poorer nations

desperate for development are less likely to impose high environmental standards which may be costly for business for fear this may be a disincentive for investment.

3.5 Modelling Alternative Conceptions of Environmental Degradation and Free Trade

To illustrate these points Figure 3.3 provides an alternative linear model of environmental degradation in poorer nations.

Figure 3.3 An Alternative Model of Environmental Degradation

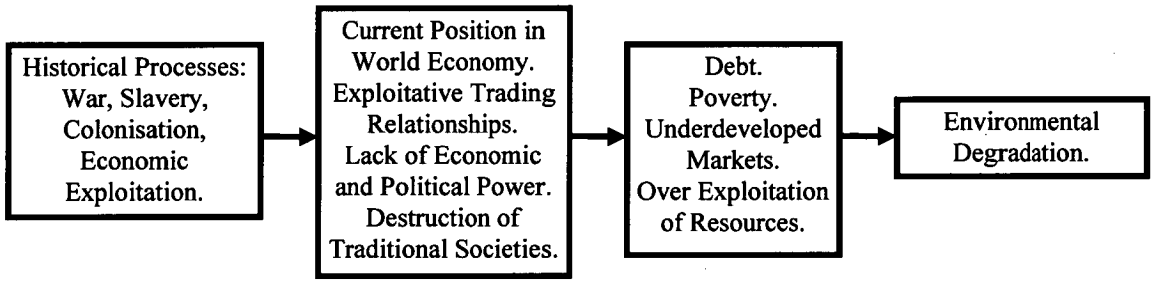
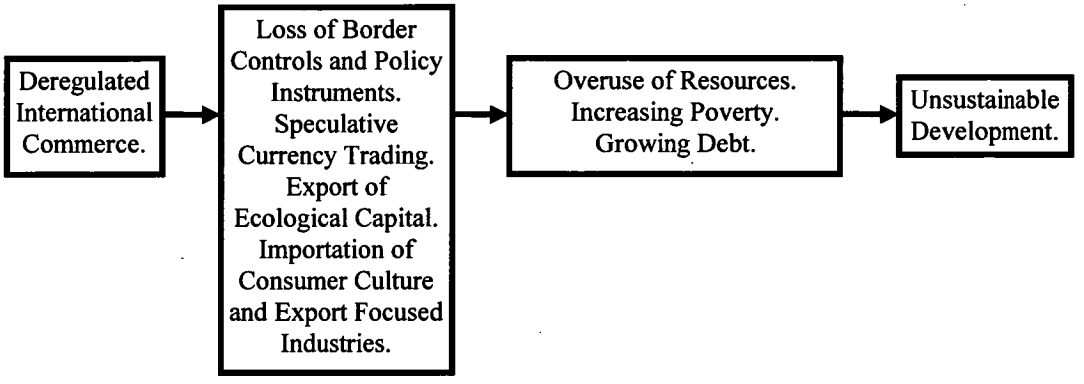


Figure 3.4 provides an alternative linear model of the effects of deregulated international trade on such countries

Figure 3.4 An Alternative Model of the Effects of Deregulated International Trade



3.6 Conclusion

This discussion of sustainable development is not intended to suggest that the state is powerless to affect change in an increasingly globalised economy, that poverty has nothing to do with environmental degradation or freeing trade has no positive contribution to make to sustainable development. Rather, illustrating some of the major points of contention about sustainable development reveals that it makes crucial assumptions about political issues that require further investigation. This is particularly true regarding the positive environmental benefits of expanding international trade. It is assumed that international trade is an equitable process in which all participants and their environments benefit. Additionally, freeing trade enhances global eco-efficiency and the growth associated with expanding international trade will end poverty and free income to tackle environmental problems. Any negative consequences that arise from trade will be far outweighed by the positives. Issues such as whether or not international trade may be an exploitative process which will increase pressure on the resource base, or that globalising trade may simply magnify the processes of environmental degradation and undermine moves toward a sustainable future in nations not dominant in the global economic sphere are not considered.

The 'one world' of sustainable development supported by the World Trade Organisation, United Nations, World Bank and major business groupings envisages a revitalisation of the international economy. It presumes environmental destruction and poverty are invariably linked and provides an entirely positive view of the international economy. The perspective is non political and it takes no consideration of who the benefits of trade accrue to. Therefore a new framework of analysis to analyse the relationship between trade and the environment is required.

-4-

Political Ecology: An Alternative Framework of Analysis

4.1 Introduction

The development of a framework of analysis that will enable investigation of trade and environmental issues not fully incorporated into the dominant sustainable development and neoclassical frameworks is the intent of this chapter. The emerging discipline of political ecology is presented as it unites the broad concerns of ecology and political economy and acknowledges that the practices and institutions which have the greatest ability to influence ecological outcomes are not necessarily environmental, but rather those concerned with the functioning of the world economy. This chapter firstly defines political ecology, defines research areas in the field of political ecology and identifies the specific issues involved in an examination of the political ecology of international trade and how those issues can be interrogated.

4.2 Defining Political Ecology

A political ecology approach leads to 'an inquiry into the political sources, conditions and ramifications of environmental change' (Bryant 1991 p.165). Bryant, Rigg and Stott (1993) argue mainstream sustainable development literature depicts environmental degradation as a problem impacting on both rich and poor equally. In contrast: 'political ecology focuses on the interplay of diverse economic, political and social forces and the relationship of those forces to environmental change' (Bryant 1991 p.165). Thus a political ecology framework is adopted to examine the issue of whether increasingly globalised trade increases or decreases the problems associated with moving to a more sustainable future.

'The concept of political ecology provides an alternative framework for political scientists to interrogate issues related to the environment in a more comprehensive manner' (Dwivedi 1986 p.378). Greenberg and Park (1994) argue that political ecology is not an exercise in 'intellectual deforestation' attempting to destroy other analytical positions. Rather they consider it an extension of the traditional issues raised by the social sciences about the relations between human society and a predominantly humanised environment.

The definition of political ecology cited most frequently in the literature is articulated by Blaikie and Brookfield in their studies on land degradation: 'the phrase "political ecology" combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land based resources, and also within classes and groups within society itself' (Blaikie and Brookfield 1987 p.17).

Linking politics and ecology can be accomplished through recognising ecology as a biological science that explores patterns of interaction between species and their environments, and politics as field which examines the use of power and authority in the regulation and control of species living in an environment (Dwivedi 1986). Bryant (1997) suggests that evolution in the field of ecology can be traced with reference to works by Clements (1905), Odum (1953), Steward (1955), Williams (1966), Hagen (1992) and Worster (1985, 1990, 1993). Dobson indicates the breadth of ecology when stating:

> Man's activities from building and operating nuclear power stations to factory farming should be considered as an integral part of the complexity of the living world and are just as 'ecological' as a fen or a forest. Ecology has grown from being a minor branch of biology to an interdisciplinary study which, as the American ecologist E.P. Odum suggests, 'links the natural and social sciences'. Hence the special role of the ecologist may well be to take an all inclusive approach to the world's problems in contrast to the approaches taken by economists and politicians and, it may be added, many scientists (Dobson 1991 p.21).

Political economy has long history and is closely linked with radical scholars such as Marx and the liberal forefathers of modern economics such as Smith and Ricardo. Notwithstanding differences in theoretical positions, classical political economists shared a belief in the value-laden character of economics and would have regarded the relatively recent separation of politics (broadly defined) from economics (viewed as a purely scientific

enterprise) as questionable (Greenberg and Park 1994). They accepted that different classes had different interests and that each was likely to promote policies in their own favour. Central to political economy has always been the belief that there is non-coincidence of all individual interests and the potential for collusion (Greenberg and Park 1994).

Political economy as defined within the political ecology literature encompasses:

> a whole range of perspectives which sometimes differ from one another and yet share common concerns and similar viewpoints ... economy is understood in its broadest sense as a social economy, or a way of life, founded in production. In turn, social production is viewed not as a neutral act by neutral agents but as a political act carried out by members of classes and other social groupings ... while political economy refers to a broad spectrum of ideas, these notions have focus and order as part of a general, critical theory emphasizing the social production of existence (Peet and Thrift 1989 p.3).

Political ecology through its evolution has placed relatively greater importance on political rather than ecological issues. This occurred because of the belief that understanding and solving environmental problems requires recognition that the current situation is the outcome of political actions. Inevitably politics and environment are tied together by the fact that all ecological arguments and projects have important social ramifications. Similarly most political arguments and projects also have important ecological ramifications

Political ecology acknowledges that if sustainable development is to be effective, political questions must become a central analytical focus. Assumptions pertaining to state and society should shunned if they mask facts regarding political and economic outcomes (Bryant 1991). Bryant argues that it is 'only after such truths are acknowledged that effective action commensurate with the scale of the present ecological challenge will be possible' (1991 p.166). Political ecology aims to 'create a better understanding and harmonious relationship between man and the environment' (Dwivedi 1986 p.378). It recognises the interdependence of politics and the environment and acknowledges that 'the role of politics in shaping ecology is much greater today than in the past as a result of rapid social and technological changes that render problematic the idea of a 'natural' environment' (Bryant 1997 p.5). Much of human endeavour has involved attempts to insulate against the vagaries of ecological processes. The success of such attempts can be seen in the fact that some authors now argue that the hold of ecological processes on human affairs is in decline. For example German sociologist Ulrich Beck (1992) has argued that the character of risks facing humankind has shifted with the success of industrial society from naturally induced disasters to risks and hazards generated by human activity. Beside the threat of nuclear destruction there are now a number of other environmental problems such as ozone depletion, industrial pollution, chemical pesticides and the depletion of natural resources. These environmental risks are typically cross border problems that implicate most if not all nation states. Political ecology should not avoid an understanding of ecological processes, as these will inevitably continue to influence human and environmental relations (Bryant 1997). However, as the development of many environmental problems is increasingly linked to political rather than

ecological processes, the basic need to focus on politics is apparent. Moreover, 'it is only through political means that a solution to those problems will be devised' (Bryant 1997 p.5).

Increasing integration in the global economy demonstrates that ecology and international political economy should not be considered as separate areas of investigation. The institutions that have the greatest ability to influence ecological outcomes are: 'not specifically 'environmental', but rather are the core institutions that govern (or at least seek to govern) the workings of the world economy (Hurrell and Kingsbury 1992 p.4). Such institutions include the World Bank, the International Monetary Fund, the World Trade Organisation, the Group of Seven, and to some extent the OECD (Hurrell and Kingsbury 1992).

The historical coincidence between the rise and spread of capitalism and the advent of global environmental crises has been pivotal to the concerns of political ecology. The degradation of resources and sinks on a global scale can be perceived not as the outcome of human agency (where agency means wilfulness, or purposive or intentional action) but rather as the collective outcome of a set of structured practices and processes (Saurin 1996). Attention paid to globalised reiterated practices such as trade may expose more about the sources of, and responses to, degradation than an approach centred on analysing inter-state negotiations regarding such issues. 'Bluntly stated a focus on inter-state relations is largely irrelevant to the explanation of global environmental degradation, nor is an elaboration of interstate relations likely to lead to any reversal of such degradation' (Saurin 1996 p.85).

The major globalised reiterated practices such as trade are parts of a wider capitalist world system. Modern development transforms resources and sinks according to the logic of global capital accumulation. Whilst the capitalist mode of production has spread across the entire globe, variation exists in its form and the extent to which it is regulated and resisted (Saurin 1996). Nevertheless, there are universal elements of the global capitalist system related to ecological degradation which can be identified.

Capitalism is a global structure of material accumulation which concentrates wealth, power and goods in certain locales and at certain social levels. It accomplishes this by extracting from other locales and social levels partly through the mechanism of trade. Bio-physical systems are regarded as material sources and sinks and the process of using resources and inundating sinks within the framework of capitalist production and profit is one of the central causes of ecological degradation. Moreover, profit within the capitalist system is partly derived through the externalisation of many of the costs of production and consumption. The separation of use value from exchange value through a monetarised economy has shifted economic growth away from a reliance on local resources to global resources. Saurin argues that an increasingly global economy shifts the point of control toward markets:

> Exchange value, as manifested increasingly in the world capitalist economy, is divorced from any capacity to reflect basic human needs and requirements. Instead, it compounds the possibility of market criteria, and of monopolies in particular, in such a way as to set the terms in which nature and labour are

> exploited. Such a process would involve the internalisation of otherwise socialised or externalised costs. In other words, with the expansion of the scale of capitalism, there has been an inexorable transferring of environmental control from the direct producer to the monopoly capitalist (Saurin 1996 p.88).

Organisations such as the World Bank (1992) have argued that environmental problems in poorer nations are the result of policy failure. Work within the field of political ecology argues that such a position is an oversimplification. Rather such environmental problems are 'a manifestation of broader political and economic forces associated with the global spread of capitalism' (Bryant 1997 p.4).

Political ecology advocates change in political systems and the values and attitudes that people hold toward the environment. In order to encourage these basic changes political ecology strives to heighten awareness of the growing crisis of environmental degradation and to instil an ecological consciousness. Inherent in the political ecology position is the belief that the only way many environmental problems will be solved is through fundamental changes to the local and global political economy. 'These changes will not occur without considerable struggle since they necessitate the transformation of a series of highly unequal power relationships upon which the present system is based: First/Third Worlds, rich/poor or rulers/ruled' (Bryant 1997 pp.4-5). Thus political ecologists argue that the scale of change required will not be accomplished by reformist strategies. They are disparaging of

mainstream sustainable development as a basis for change as this concept is premised on the maintenance of the present political and economic structure.

4.3 Research Areas in Political Ecology

Bryant (1991) suggests that political ecology embraces different social and ecological scales and addresses at least three distinct, but inter-related research areas:

> First research into the contextual sources of environmental change examines the general environmental impacts of the state and its policies, interstate relations, and global capitalism. In a world of increased political and economic interdependence, these topics signal the growing social and ecological influence of national and transnational forces.
>
> A second and complementary research area investigates the location specific aspects of environmental change. The study of conflict over access affords insights into how contextual actors impinge on specific socio-ecological conditions and relationships. More importantly however such research documents the resistance of the relatively powerless as they fight to protect the environmental foundations of their livelihood.
>
> A third research area addresses the political ramifications of environmental change by assessing the effects of such change on socio-economic and political relationships. To what extent are environmental costs borne by

> socially disadvantaged groups, and how does this unequal burden affect existing socio-economic inequalities? Under what circumstances does unequal exposure to environmental change lead to political confrontation? Examining the vulnerability of the poor to both episodic (drought, flooding) and everyday (soil erosion, salinization, deforestation) forms of environmental change, this research highlights an important theme in political ecology - namely, that the impact of environmental change is rarely neutral and may well reinforce prevailing socio-economic inequalities (Bryant 1991 pp-165-166).

The development of political ecology reflects an expanding agreement in the social sciences regarding the fact that it is not enough to focus on local cultural dynamics or international exchange relations. Rather the past and present relationships between a widely defined political economy and the environment needs to be examined (Greenberg and Park 1994). Interactions between actors such as states, corporations, non-government organisations and landholders and their relationships to the physical environment are conditioned by power relations. Power is a well investigated and persistent theme in political science. (For example Bryant (1997) suggests that works by Mills [1956], Dahl [1957], Bachrach and Baratz [1970], Lukes [1977], Foucault [1977], Lindblom [1977] Mann [1986] and Cox [1987] are the most influential.) Political ecologists work from a minimalist definition, primarily understanding power 'as the control that one party has over the environment of another party' (Bryant 1997 p.7). This indicates that an examination of the various ways and forms in which one actor

seeks to exert control over the environment of other actors and how power relations manifest themselves, are central components in a political ecology analysis.

4.4 Issues in the Political Ecology of International Trade

Analysis of the dominant neoclassical and sustainable development framework in combination with the alternative political ecology framework suggests that an examination of the following questions is necessary:

Are the assumptions made in mainstream sustainable development regarding the positive environmental benefits of international trade justifiable?

What are the environmental effects of expanding international trade at the global and local level, and are environmental costs equally shared?

What are the political ramifications of expanding international trade, including its effect on state, corporate and individual actions in relation to the environment? How does power manifest itself in gaining access to the environmental resources important in international trade?

If the present conduct of international trade is incompatible with the goals of sustainable development what changes should be made to systems of governance and business practices?

To explore these issues and assess the validity of the respective frameworks a case study is used. The case study concerns the expansion of the pulp and paper industry in Indonesia. This case study was chosen as there has been massive growth in the industry since 1992, virtually all the output of the industry is destined for export markets, and there has been heavy Northern involvement in all projects. Moreover expansion of the industry is in line with theories of international trade and sustainable development which encourage countries to specialise in areas where they have a natural advantage to maximise economic growth.

The exploitation of forest resources within Indonesia has played a key role in overall socio-economic development plans and is therefore indicative of many trade and environmental issues such as the environmental effects of economic expansion and diversification. Rainforests in Indonesia which provide the bulk of the industry's raw material are considered amongst the most biologically diverse and threatened ecosystems in the world and play an important role in climate stabilisation. Therefore the impact of forest exploitation driven by internationally constructed demand is of global ecological importance. Forest products from the region have been primarily exported to Northern markets, most notably Japan, and this is indicative of trade between developed and developing nations. Forest exploitation within Indonesia has historically had an international aspect with large-scale foreign investment by multinational corporations and has been influenced by the adoption of a mixture of free market and interventionist policies within importing and exporting nations.

Much discussion, moreover, has taken place in regard to the positive role of international trade in sustainable timber harvesting. The United Nations Commission on Sustainable

Development *Ad Hoc* Intergovernmental Panel on Forests argues that international market access will be a key factor in determining the long term success of a global policy to encourage sustainable forest management through trade, as it reduces market uncertainty, making the rational transition toward sustainable practices possible. The transition toward sustainable forest management is likely to impose significant costs on timber operations and forestry industries in both temperate and tropical regions. However the burden is likely to be greater for tropical countries since they will face higher production and harvesting costs than boreal and temperate countries whose producers are considered to be more efficient and environmentally advanced. Thus it may no longer be economically worthwhile to harvest certain forests and significant portions of the forest resource base of certain countries may have to be taken out of production with resultant conservation benefits (United Nations Commission on Sustainable Development 1996). It is recognised that market imperfections within countries in the form of subsidies give rise to pressures that result in unsustainable forest practices. Increased trade on the basis of comparative advantage is advocated as this will create the economic growth necessary for countries to move on to a higher stage of development and free the income necessary for a shift toward environmental programs and sustainable production. For example, higher national income reduces debt and population pressure, and allows the establishment of national parks and the creation of mechanisms to ensure ongoing commercial forest viability.

4.5 Conclusion

Dramatic changes in the world economy are occurring at the same time as the ecological impact of these changes is being debated. International trade, because of its role in

facilitating what products are to be produced, and where, plays an important role in deciding global ecological outcomes. The dominant position on the relationship between trade and environment belongs to sustainable development which accepts many of the assumptions laid down by the neoclassical economic paradigm. A more critical account of the relationship between trade and the environment may be achieved through the use of a political ecology framework. The strength of this approach is that it gives a politicised account of environmental change and looks for the interplay between forces at the international, national and local level.

-5-

Case Study: Expanding Indonesian Pulp and Paper Ventures, International Trade and the Environment

5.1 Introduction

This case study seeks to illustrate the possible environmental consequences that successful implementation of a global trading system based on comparative advantage and specialisation could have. Expanded analysis of the pulp and paper industry in Indonesia has been chosen for a number of reasons. Primarily these are that it is reflective of economic development in line with conceptions of comparative advantage; the majority of production is exported; foreign capital has been a vital component in the expansion; the industry has been promoted as an excellent example of the way openness in an economy can lead to positive environmental outcomes; and currently a major campaign is underway to further liberate the international trade in forest products from Southeast Asia. Furthermore, the growth of the industry has been strongly influenced by

international patterns of regionalisation and globalisation of fibre production, consumption and trade. This chapter aims to examine the economic and environmental framework of the global industry, place the pulp and paper industry in a historical context as the latest internationally traded product harvested from the forests of Indonesia, detail companies and projects indicative of the Indonesian industry overall, investigate the political ecology of forest based industries and examine the possible environmental effects that further freeing of trade may have.

5.2 The International Pulp and Paper Industry

Since the 1950s world trade in pulp has increased around five times while the global wood fibre market has tripled (Haglar 1993). The paper industry expanded in the 1960s in response to rapidly increasing demand (Thompson and Kennedy 1996). 'Consumption in the two main subdivisions of the industry, bulk paper grades (products used in publishing, container and food industries) and value added grades (stationery and coated paper) grew at five percent annually' (Thompson and Kennedy 1996 p.43). During the 1970s industry growth slowed in line with a wider global economic recession (Thompson and Kennedy 1996). In this decade the ownership patterns of the industry changed markedly. Mergers or takeover acquisitions transformed what were formerly family owned businesses into transnational corporations. Acquisitions allowed the internationalisation of production, and vertical or horizontal integration. Corporate strategy at the time within the pulp and paper industry centred on the formation of large and diversified conglomerates (Thompson and Kennedy 1996).

The success of the internationalisation of production is evident in the fact that high paper consuming countries currently pull in materials for paper production from all over the world. A sheet of paper produced in Japan can contain wood fibres from trees grown in Australia, Chile, Papua New Guinea, Brazil, Canada, Indonesia, South Africa and the United States. Approximately 90 percent of paper pulp globally is made of wood, either by grinding it up (thermomechanical pulping) or chipping and boiling it in strong chemicals (chemical maceration, usually involving chlorine). Large quantities of fresh water and power are required for the process. Paper manufacture is estimated to account for thirteen percent of global wood use and represents more than one percent of total global economic output. Rough estimates suggest that global paper production consumes twenty thousand square kilometres of wooded land annually (International Institute for Environmental Development 1995). The World Wide Fund for Nature estimates that over 45 percent of the world's annual commercial timber cut goes to pulp, paper and board (WWFN International 1995).

Since the 1940s kraft processing, which involves the boiling of wood chips with caustic soda, has been the most widely used pulping process. The bleaching stage in this process is achieved through the use of chlorine gas, chlorine dioxide or hypochlorite. Between 50 and 80 kilograms of chlorine is used to produce every tonne of conventionally bleached kraft pulp and approximately ten percent of this chlorine is eventually released in mill effluent.

The pulp bleaching process produces a variety of toxic chlorine compounds known as organochlorins. Dioxin, the most notable of these, is recognised as being highly

carcinogenic. Dioxin is accepted as causing reproductive disorders and is highly bio-accumulative (Pickin 1996). In 1985 dioxins were documented in discharges from pulp mills in the United States and later in the products produced in these mills. The strong public concern, which followed these findings, forced industry to modify production processes to reduce the formation and discharge of dioxins (Pickin 1996). Global pulp and paper production processes discharge approximately 950,000 tonnes of effluent containing toxic organochlorin compounds into rivers and over 100,000 tonnes of sulphur dioxide into the air (Pickin 1997).

The United States Environment Protection Agency classifies the pulp and paper industry as a major source of hazardous air pollutants because of the known presence of volatile organic compounds in emissions. Concern over organochlorins and vocal opposition from consumer and environmental groups led the pulp and paper industry to search for new technologies aimed at reducing the use of chlorine gas as a bleaching agent. The most widely adopted of these new bleaching processes, is Elemental Chlorine Free (ECF) bleaching. ECF bleaching avoids the use of chlorine gas by using chlorine dioxide as the main bleaching agent. Discharges from the ECF process plants contain less total organochlorins and are considered less toxic than those produced by traditional methods (Pickin 1996) The alternative to ECF bleaching is Totally Chlorine Free (TCF) bleaching. TCF is more expensive to retrofit onto existing pulp mills. It uses peroxide, ozone, and oxygen as bleaching agents (Pickin 1996).

The Alliance for Environmental Technology, a group of North American pulp producers that are locked into the production of ECF pulp constantly promote the benefits of

ECF. They claim that there is no justification for TCF production on economic or environmental grounds. Pickin (1996) reports that according to them TCF pulps are inferior and more expensive to produce, are of questionable environmental benefit, and merely a bid to win government support and market share. In contrast TCF producers report dramatic improvements in the quality of their effluent. They contend that ECF still produces dioxins and organochlorins and that chlorinated organic residues remain in the mill sludge (Pickin 1996).

Major environmental groups argue that TCF pulping is preferable as ninety percent of organochlorins in pulp mill effluent and atmospheric discharges have not yet been specifically identified or assessed, and cites the precautionary principle as to why these should not be discharged into the environment.

While the international pulp and paper industry has attempted to undertake positive environmental initiatives in terms of its effluent, its increasing size and capital-intensive nature brings with it an assortment of inevitable environmental problems.

> Mills require secure access to large supplies of nearby wood and water. Thus a large proportion of mills are built on the edge of large rivers and timberlands requiring the construction of roads, port facilities and connecting waterways. With the current trend of pulp and paper industries shifting their operations and investments to poorer countries with less stringent environment regulations, indigenous communities and environments are being affected (Thompson and Kennedy 1996 p.46).

Within Indonesia the expansion of the pulp and paper industry has triggered important and decisive changes and conflicts involving land use and water (Lohman 1996).

While the environmental effects of paper production have been questioned this has had little discernible effect on paper consumption. Changing business and household practices have vastly increased the range of uses for paper in the industrial world. In 1991 over 40 percent of the world's paper production was used for packaging and wrapping, 30 percent went for printing and writing and thirteen percent for newsprint (IIED 1995). In Western countries discarded paper products constitute up to 40 percent of the waste stream (Kroesa 1990).

One of the great promises of the technological revolution, the paperless office, has failed to eventuate. The fastest growth in the use of paper for writing and printing came in the late 1980s at the same time as the use of the personal computer was spreading. During the past five years, the production of printing and writing paper in North America has grown by over thirteen percent. Worldwide it has doubled since 1982 (*The Economist* 19 December 1998). Electronic devices in homes and offices have added significantly to global paper usage. Hewlett-Packard estimate that in America in 1996 860,000,000,000 pages were processed through copiers, fax machines and computer printers (*The Economist* 19 December 1998). Rather than decreasing paper usage the spread of new information technologies has had the opposite effect.

The current model of industrial development ties paper to a broad range of economic activities outside publishing and per capita consumption is expected to increase with global industrial expansion. A report released by the World Business Council for Sustainable Development in 1995 predicted that there will need to be an 85 percent increase in total pulpwood production over the next fifty years to satisfy global demand in the pulp and paper industry. Pulpwood production is forecast to increase from approximately 715,000,000 cubic meters to over 1,300,000,000 cubic meters (IIED 1995).

Global consumption of paper per capita has risen from one tenth of a kilogram in 1910 to 15 kilograms in 1950, and to around 46 kilograms in 1993. Unlike per capita sawnwood production it shows no signs of levelling off (World Watch Institute 1994). Based on the continued growth of paper consumption.

Table 5.1 shows per capita global paper consumption for selected countries in 1993

Table 5.1: Paper Consumption in Selected Countries, 1993

Country	Kgs Per Capita
United States	313
Japan	225
Hong Kong	220
Finland	215
Taiwan	205
Germany	190
United Kingdom	170
Australia	152
Italy	132
South Korea	128
Ireland	97
Malaysia	62
Chile	39

Poland	31
Thailand	30
Russia	30
Brazil	28
Bulgaria	20
China	17
Egypt	11
Indonesia	10
Serbia	10
India	3
Vietnam	1
Laos	< 1
Ghana	<1

Source: Kerski 1995

Per capita consumption of paper reflects economic success. In 1993 the Southern Hemisphere plus Eastern Europe, with 84 percent of the world's people, consumed less than a quarter of the paper and board produced. Per capita, people in the United States consume 43 times as much oil as Indians. In contrast they consume 386 six times as much pulpwood (Kerski 1995). Within Indonesia increasing paper consumption provides a similar scenario.

> Despite Indonesia's lack of a lengthy history as a paper culture, aggressive advertising now promotes 'Western style' consumption. Tissue paper, for example, is one of the industry's fastest growing segments, from 8,300,000 tonnes in 1988 to a projected 55,000,000 tonnes in 2000. Until recently few Indonesians used tissues, however now cosmetic tissues, toilet paper and serviettes have become commonplace in urban centres. 80 percent of paper is consumed in Java with 60 percent of this in Jakarta alone (with only eight percent of the nation's population). Thus it is largely the urban minority which is consuming the majority of paper. In

> contrast, the people of Sumatra, Kalimantan and Irian Jaya, the main source of raw materials for the industry, consume only twelve, three and two percent of paper respectively (Thompson and Kennedy 1996 p.50).

The global pulp market is one that is historically prone to a savage boom and bust cycle. For example, in 1983 the industry entered a boom cycle which went bust in 1989 resulting in a significant recession in the industry. According to Thompson and Kennedy (1996) 'pulp prices fell by more than half to a 50 year low, industry profit levels fell by nearly 50 percent and bankruptcies and divestments became common. The recession was primarily a result of the industry's previous forays into strategies of diversification, expansion and acquisitions which resulted in greatly increased capacity and oversupply' (p.44). The oversupply of pulp that precipitated the bust was caused by a combination of economic recession, declining demand in key markets and increasing output from Asian producers (Thompson and Kennedy 1996). The boom and bust cycle means countries with low resource costs, such as raw materials and labour, become even more attractive as sites for investment as they can continue profitable production during cyclical downturns and provide excellent returns during upswings. The behaviour of pulp and paper firms has reinforced difficulties in the industry as they have 'attempted to aggressively increase their market share by expanding capacity, hoping to become price setters with the aim of minimising price falls when the cycle turns' (Thompson and Kennedy 1996 p.44).

Increasing globalisation in the pulp and paper industry exaggerates financial instability by adding the uncertainty of exchange rate fluctuations (Fletcher 1988). Recession, political

upheaval in important markets, the likelihood of more stringent environmental regimes for Northern producers, unanticipated falls in yield from plantations and unexpected increases in pulp capacity by manufacturers in countries with large forest resources can all strongly impact upon the global pulp market.

Newer pulp and paper plants tend to be enormous operations. Global economies of scale that have developed over the previous 30 years in the industry have resulted in a situation where the majority of the world's pulp is produced by a relatively small number of large machines that can cost up to one billion US dollars to build. According to Lohman (1996) reliance on big machinery combined with freely available technology and debt finance has created a tendency to overbuild during boom times. This has resulted in overcapitalisation and overproduction and been a contributing factor to the boom and bust economic cycle (Lohman 1996).

Building cost competitive paper mills now involves the investment of billions of dollars. Industry consultants such as Finland's Jaako Poyry, the world's largest forest industry consultancy firm have argued that only operations of this scale can be competitive (Lohman 1996). Consultants have played a central role in the expansion of the pulp and paper industry in Indonesia. In 1984 Jaakko Poyry, won a contract from the World Bank to make recommendations for the pulp and paper industry in Indonesia. Since the completion of the report the company has participated in many of the large plantation and pulp and paper projects that have been planned and implemented. Other Finish companies have been machinery suppliers to the Indonesian industry.

5.3 The Indonesian Pulp and Paper Industry in a Historical Context: Previous Patterns of Extractive Timber Industries

Pulp and Paper is the latest industry to rely on the forests of Indonesia to generate export earnings. Detailing the historical patterns of other major industries such as sawn timber and plywood should give some guidance in making conclusions about the likely long term environmental, social and economic impacts of the industry and the likely effects of further freeing of trade.

The forests of Indonesia, have been inhabited to an extent never achieved in the temperate world (Bernard and DeKoninck 1996). The rainforests of Kalimantan are estimated to have been inhabited for at least 39,000 years compared to 12,000 for Amazonia (Bernard and DeKoninck 1996). The main focus of trade for most of this history of habitation has been in forest products other than timber. Items such as rattan, gums and oils, dyes, fibres, fruits, nuts and medicinal plants were gathered by forest inhabitants to be bartered or sold among tribal groups or to local traders (Ooi 1990).

Until the nineteenth century hardwood timber, although used locally for a variety of purposes, was a minor international trade item. After this time countries of the Western Hemisphere began importing small quantities of high quality exotic hardwoods from their tropical colonies, to meet the demands of rapid industrialisation. Heavy hardwoods were mainly logged and exported because of their durability (Ooi 1990).

Such trade patterns made demands on few of the many tree species of the rainforest and had minimal environmental impact. Prior to World War II demand from the

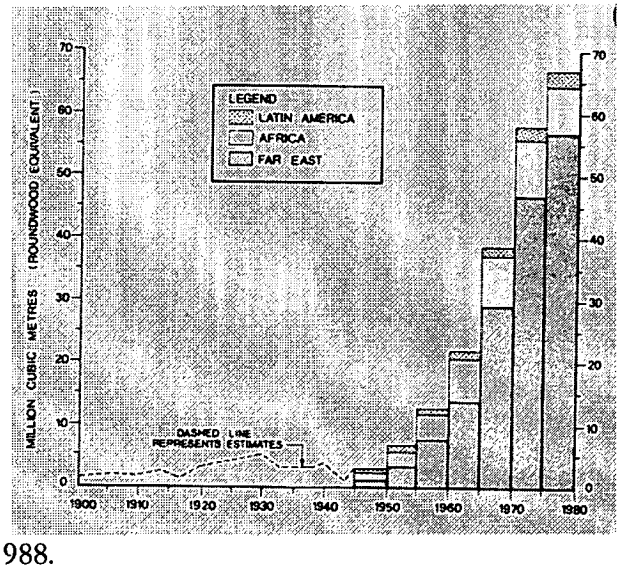
industrialised world for tropical timber was limited as the majority of industrially developed countries had substantial forest reserves and produced their own timber products. Logging in tropical forests for timber was limited to those species capable of commanding prices high enough to provide a return after the cost of harvesting and transport were deducted. In the prewar period most tropical countries of the world (including Indonesia) were colonies of the European powers. All were richly forested but imported more timber than they exported (Ooi1990).

The export pattern for tropical timber changed considerably after the war. Demand for forest products and materials was intensified by the reconstruction of the Japanese and European economies. The initial period of reconstruction was followed by a quarter of a century of high economic growth. During this same time many of the former colonies gained political independence. Newly independent countries that had rich natural resources exploited and exported them in return for much needed foreign exchange, initially using trade links built up during the colonial period and often reinforced by tariff arrangements which gave preferential treatment to the ex-colonies. Tropical countries exported increasingly large quantities of forest products, and export earnings from this source for developing countries increased dramatically. Technological progress in wood preservation facilitated the expansion of the tropical timber trade and this occurred during a time when many countries were unable to meet consumer demand from domestic forest resources. The trade in tropical timber from Indonesia developed through a number of phases. Exports were initially of unprocessed logs and while this remains a major market segment subsequent years have witnessed the development of sawnwood, plywood and most recently pulp and paper export focused industries.

Foreign trading companies started organising large-scale exports of hardwood logs from developing Southeast Asian nations in the 1950s. Financed mainly by multinational companies, the expansion of logging in Indonesia began with the introduction of mechanised operations (Nectoux 1991). Companies involved included the American firms Weyerhaeuser and Georgia Pacific, and European firms such as Harrison and Crosfield, and Inchape. In later years Japanese companies such as Mitsui and Mitsubishi have come to dominate the international tropical timber market (Nectoux and Dudley 1987).

The significant growth in global exports of tropical hardwood, as shown in graph 5.1, has been due to the increase in production and export of hardwoods from the Southeast Asian region.

Graph 5.1 World Exports of Tropical Hardwood Timber



Source: Laarman 1988.

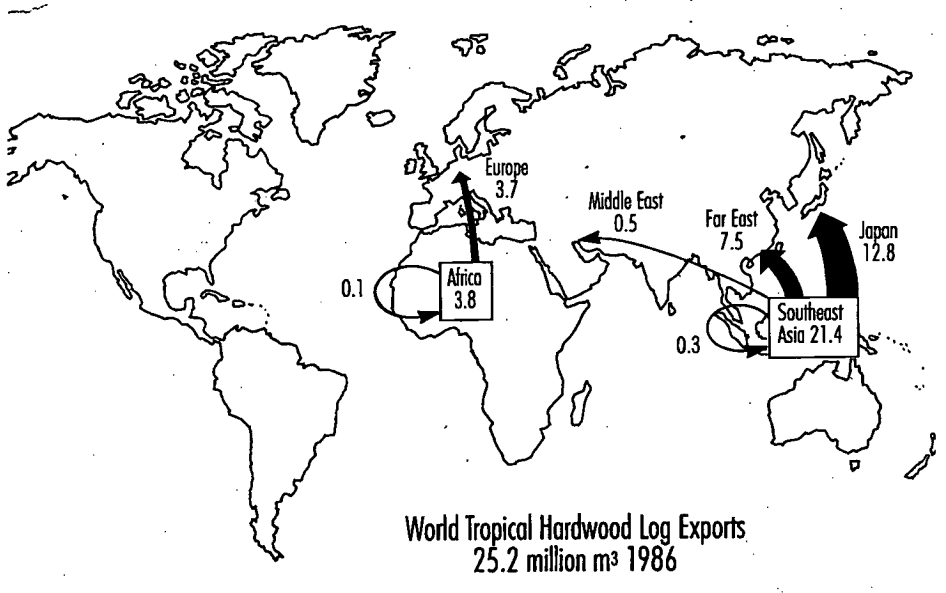
Japanese requirements for timber in the postwar reconstruction period could not be satisfied by domestically produced timber. As such the forests of Indonesia were identified as a cheap and plentiful resource. Following the adoption of a free trade policy in the 1960s, Japan commenced to import significant quantities of tropical timber to meet demands. According to Nectoux and Kuroda (1988) Japan began importing tropical timber because of the demand created by the booming economy, the high cost of domestic supplies and the low price of the imports. Imports of tropical timber into Japan were used as lumber or processed into plywood for use in the construction industry or exported to North America and Europe. The availability of cheap Southeast Asian logs encouraged other countries in the region such as South Korea, Taiwan and Singapore to join Japan as major plywood producers. In the late 1960s South Korea replaced Japan as the major supplier of tropical plywood to the United States before Indonesia assumed market leadership in the 1980s.

The response of the Southeast Asian countries, such as Indonesia, to the demand for tropical hardwoods was an extremely rapid export expansion. Production of hardwood timber increased almost exponentially throughout the postwar period. The region became the world's major source of tropical hardwood timber in the 1950s and has remained so ever since. In 1987 the nations of Southeast Asia provided 85 percent of tropical hardwood timber export logs and processed timber products, although this had fallen to 80 percent in 1996 (ITTO 1997).

Logging booms occurred first in the Philippines in the 1950s, then in Peninsula Malaysia, and in the Malaysian State of Sabah in the 1960s. Indonesian exports grew rapidly during

the early 1970s. Production from established suppliers such as the Philippines declined in the late 1970s due to declining timber resources. Exports from the Philippines to Japan reached a peak of eight million cubic meters in 1969 then fell to around 1 million cubic meters in the early 1980s due to resource depletion (Nectoux 1991).

Diagram 5.1 World Tropical Hardwood Log Exports 1986



Source: Nectoux 1991

Export booms were instigated by a combination of government incentives such as tax concessions, low royalties, low export duties and favourable taxation regimes and large-scale investment by foreign companies. In 1961 a Japanese initiated report presented a framework for the exploitation of Kalimantan's forests by Japanese trading companies and the Japanese and Indonesian governments. The majority of funding was provided through Japanese aid. Mitsui started logging in 1963 and many other companies soon followed. Governments assisted corporations by directing aid funds for surveys and road building to them and by providing cheap loans (Nectoux 1991). In Indonesia in 1966 the recently established Suharto government encouraged foreign companies to exploit its forests. Weyerhaeuser, the American timber giant, formed a partnership with an

Indonesian company to create the International Timber Corporation of Indonesia (ITCI) (Hurst 1990). Although Weyerhaeuser only held 65 percent of ITCI it provided the operation's total investment of US$32 million. According to Hurst (1990) ITCI's major shareholders were the top 73 Generals in President Suharto's New Order government and access to participate in the partnership was considered a reward for loyalty. The company was highly profitable as in its first seven years of operation log sales averaged US$37 million annually and in 1977 production from the concession was 1.6 million tons of logs worth US$66 million (Hurst 1990).

Supported by investments from American and Japanese firms Indonesia emerged as a major global producer and exporter of hardwood timber. Indonesian hardwood production was previously centred on teak from the tropical plantations of Java and Madura. However the opening of Kalimantan's vast forests saw a threefold increase in Indonesia's production between 1966 and 1975 (Ooi 1990). Large scale logging in Kalimantan forced many smaller operators out of the forests. For example: 'in the 1970s the southern provincial government in Kalimantan took over the rights for exploiting the ironwood trees, denying a cash income to an estimated 10,000 tribesmen. In central Sulawesi a similar number of indigenous people lost their livelihood when a Japanese logging company refused them access to the trees that they traditionally tapped for resin' (Hurst 1990 p.6). The expansion of timber extraction has also undermined the minor forest products industry. As Hurst (1990) argues:

> Despite an expanding world demand for products such as rattan and resins, the government has been unwilling to consider allocating specific

> areas for the exploitation of minor forest products rather than for timber. The two forest industries are at present totally incompatible. Timber extraction causes irreparable damage to the forests so that few minor products can survive in the new environment. In contrast, the collection of minor forest products generally has minimal impact on the environment, requires little capital investment, is labour intensive and meets the needs of Indonesia's rural population far better than the timber industry which several commentators suggest has lowered the standard of living of many people and eliminated their ability to be self supporting (Hurst 1990 p.7).

In the wake of the 1973 oil crisis and the subsequent economic downturn a number of countries in the Southeast Asia region changed their policies regarding commodity exports and foreign investment. Indonesia, later in the 1970s, sought to reduce the dominance of foreign firms in the export process. Action against foreign firms was based on the allegation that they had disregarded original agreements concerning local processing and engaged in transfer pricing (selling goods within the corporate chain at reduced prices) and illegal exporting (Nectoux 1991). Regulations were introduced which dictated that logs should be processed domestically. As a result some US and Japanese firms sold their share in local companies to their Indonesian partners (Nectoux 1991). Indonesia introduced a total ban on log exports in 1986 and most foreign investors withdrew from the Indonesian timber industry. However the log export ban should not be regarded as the sole reason for changing corporate investment. The majority of easily accessible and available timber had already been exploited. Forests in Sumatra had been

heavily logged with little timber of a marketable size remaining. Existing timber concessions covered most of Kalimantan and the timber resource in Irian Jaya was regarded as difficult to exploit because of the areas difficult terrain. As a result timber companies sought to increase investment in East Malaysia (Hurst 1990).

After the imposition of the log import ban many Indonesian timber companies moved quickly into plywood production. By the mid 1980s Indonesia's plywood mills had a capacity of more than 6 million cubic meters (Hurst 1990). Timber companies who had shifted into plywood attempted to retain profit margins through producing greater volumes of plywood. The sudden introduction of massive volumes of plywood from Indonesia inundated world markets and caused a massive price drop. The rapid decline in plywood prices had far reaching effects throughout Asia. South Korea and Taiwan lost their strong positions in the plywood market. Japan remains the largest market for Southeast Asian plywood accounting for over 40 percent of production in 1995 (ITTO 1997). The ban on log exports in favour of plywood production forced many smaller operators out of the forestry industry and concentrated ownership into the hands of those with the capital necessary to invest in plywood plants and the political contacts necessary to ensure timber supply. At this stage a number of well-connected ethnic Chinese Indonesian timber barons emerged as international scale capitalists.

A World Bank report released in 1996 forecast that the Indonesian plywood industry could collapse by the turn of the century as the rate of logging, estimated to be 40 million m3 per year, was well above the estimated sustainable yield of 22 million cubic meters per year (ITTO 1997). The Indonesian Minister of Forestry predicted Indonesia may

have to import logs from neighbouring countries as a way of overcoming a shortage of timber (ITTO 1997). Logs were suggested to be sourced from Vietnam, Burma, and the Solomon Islands with Malaysian logs being avoided as Malaysian exports are believed to include smuggled Indonesian logs (World Rainforest Report, October 1996). The clearance of 1 million hectares of forest in Central Kalimantan to facilitate a government instigated agricultural project will provide a short term easing of the problem of log supply. Tables 5.2 illustrates the changing nature of forest produce exports from Indonesia since 1965. Initial Indonesian exports were mainly of logs, before plywood and later paper and paperboard products came to dominate.

Table 5.2 Indonesian Export of Forest Products by Year

Year	Sawlogs and Veneer Logs (cubic metyers)	Plywood (cubic meters)	Paper and Paperboard (mt)
1965	177,000	-	-
1966	320,200	-	-
1967	582,000	-	-
1968	1,407,400	-	-
1969	3,719,000	-	-
1970	7,834,000	-	-
1971	10,822,000	-	-
1972	13,354,000	-	-
1973	18,500,000	-	-
1974	16,873,010	-	-
1975	12,884,000	600	-
1976	18,104,600	13,000	-
1977	18,931,800	16,500	-
1978	19,457,000	69,800	-
1979	18,160,700	117,100	6,500
1980	15,182,000	245,000	7,000
1981	6,488,600	759,500	8,100
1982	3,219,900	1,232,300	5,600
1983	3,090,500	2,106,100	10,800
1984	1,820,500	3,021,000	25,200
1985	53,400	3,963,900	36,100
1986	53,400	4,606,900	67,300
1987	62,700	5,648,400	169,400
1988	139,600	6,371,900	198,700
1989	67,900	8,038,800	202,400
1990	45,519	8,243,700	166,200
1991	134,183	8,635,300	363,300
1992	113,997	9,761,000	451,534
1993	41,605	9,627,000	668,855
1994	43,327	8,223,000	696,363
1995	43,327	8,376,000	696,363
1996	43,327	8,376,000	696,363

Source: United Nations Food and Agriculture Organisation (1997) FAO STAT DATABASE
URL: http//apps.fao.org/lim500/Agridb.pl

5.4 The Indonesian Pulp and Paper Industry

Dutch interests built Indonesia's first paper factory in 1923 in West Java (Thompson and Kennedy 1996). Using agricultural by-products it produced approximately 10 tonnes of paper per day. Apart from a similar mill built in East Java in 1939 no other paper factories were built until after independence (Thompson and Kennedy 1996).

Policies of import substitution coupled with high tariffs helped initiate growth in the industry in the early 1970s. By 1975 22 pulp and paper factories dedicated to servicing the domestic market were in operation. Where possible the paper factories used straw, and bamboo produced locally as raw materials. However as of the paper mills were not supported by local pulp mills they relied heavily on imported raw materials from countries such as the United States, Canada, Finland and Sweden (Thompson and Kennedy 1996).

Most large scale investments in the Indonesian pulp and paper industry were made after the market upswing in the late 1980s by joint ventures between domestic and foreign firms. The Suharto regime provided many concessions and tax breaks for the industry as it was seen as a rich source of export earnings. The government was actively seeking to end its dependence on oil for export revenue and the pulp and paper industry which could draw on forest resources was regarded as a replacement and enhancement of the plywood industry, which was suffering from diminished returns due to falling world demand. Moreover it was a way of pushing the timber industry toward higher value-added products and the government openly admitted that its goal was to be amongst the world's top ten producers of pulp and paper by the year 2000 (Friedland 1991). In 1995

President Suharto called for more pulp and paper mills to be established in Indonesia 'indicating that the government policy to promote the pulp and paper industry had not changed since its inception in the 1980's' (Thompson and Kennedy 1996 p.51). Table 5.3 shows Indonesian and global pulp production since 1980.

Table 5.3: Indonesian and Global Pulp Production in tonnes 1980 - 1995

Year	Indonesian Production	Global Production
1980	77,000	128,310,600
1981	115,000	127,743,300
1982	144,000	122,387,000
1983	158,000	131,210,900
1984	189,000	139,026,900
1985	221,000	141,768,700
1986	221,000	148,093,100
1987	192,000	156,543,400
1988	192,000	162,754,500
1989	501,000	166,981,700
1990	786,000	165,873,600
1991	835,000	167,216,900
1992	1,150,000	165,014,100
1993	1,379,000	166,004,000
1994	1,796,000	178,706,300
1995	2,253,000	184,832,500

Source: Food and Agriculture Organisation FAOSTAT Database.

The huge amounts of capital spending needed for integrated pulp and paper mills were committed in the belief that Indonesia's comparative advantage over the dominant Northern Hemisphere producers would see them through the lengthy and expensive progression to the top of the world order.

In the early days of the expansion phase, paper industry executives constantly pointed out that Indonesia has the world's second largest tropical rainforest, an estimated 100 million hectares. A tonne of wood pulp in Indonesia costs roughly 160 to 280 US dollars to produce, far less than the 450 to 500 US dollars per tonne production costs of North

American and Scandinavian producers. Pulp cost makes up the majority of the cost of paper production (Friedland 1991). Industry leaders faced with criticism from the environment movement in Indonesia and elsewhere have since played down the source of this comparative advantage, claiming that the natural forests are only being used until acacia and eucalyptus plantations come to maturity. The pulp and paper industry is also able to make use of forest resources that are not economically viable for logging or plywood production. Trees of smaller diameter can be used, thereby increasing total forest output.

As economically and politically available natural forests have been depleted globally and new pulp technologies have been developed, plantations have become an increasingly important source of raw material. Plantation species such as acacia and eucalyptus mature more rapidly in the tropics. Land is also comparatively inexpensive in Indonesia and this provides an advantage for large chemical pulp mills as economic necessity dictates that they be sited in the centre of large raw material catchment areas (Lohman 1996). The government instigated transmigration program provides a ready pool of cheap labour for plantation establishment which is occurring mostly on the outer islands.

As a major oil producer, Indonesia also has fuel cost advantages. Fuel cost and wage bills which account for about 22 percent of the total cost of pulp production, are about one third of those in Thailand and Malaysia, which are also trying to expand their pulp and paper industries, and one tenth of Taiwan's, Indonesia's closest regional competitor (Friedland 1991).

The potential for growth in the Indonesian market and neighbouring Asian markets is also a strong attraction for global investment. Indonesians use little paper per head of population and economic forecasts and demographic factors suggest that that there will be rapid growth in demand for writing and printing paper. Government policies to spur non oil exports means that demand is already strong for industrial paper. Increasing industrialisation in South East Asia can only add to this demand and paper produced in the region will have a political and geographic advantage.

Table 5.4 shows pulp projects planned for Indonesia which, if completed, will result in a vast increase in total pulp production and make the country one of the world's largest producers. Falling world pulp prices means that some of these projects will not be built. However if many of the planned projects do come to fruition the extra capacity could be enough to depress pulp prices for a number of years.

Table 5.4: Planned Pulp Projects in Indonesia

Company	Location	Start	Capacity/year
PT Adindo Pulp and Paper	East Kalimantan	2003	300,000 tonnes
PT Aspex Paper	East Kalimantan	1998	250,000 tonnes
PT Dharma Trieka Sejaherta	East Kalimantan	2003	300,000 tonnes
Djajanti Group	Irian Jaya	2003	300,000 tonnes
PT Fajar Surya Swadaya	East Kalimantan	1998	300,000 tonnes
PT Guhara Lestary Cellulosa	Sulawesi	2003	300,000 tonnes
PT Intan Prima Cellulosa	Jambi	1998	200,000 tonnes
PT Intim Nusapersada	Jambi	1998	150,000 tonnes
PT International Timber	East Kalimantan	2003	500,000 tonnes
PT Kiani Kertas	East Kalimantan	1997	450,000 tonnes
PT Mayangkara Tanaman	East Kalimantan	2003	300,000 tonnes
PT Nityasa Prima	East Kalimantan	2003	500,000 tonnes
PT Perwang Sukses Perkasa	Riau	2003	350,000 tonnes
PT Sumatera Sinar Plywood	North Sumatra	2003	500,000 tonnes
PT Takengon Pulp and Paper	Aceh	2003	300,000 tonnes
PT Tanjung Enim Lestari	South Sumatra	1997	450,000 tonnes

Source: Indonesian Center for Environmental Law Green News 31/5/1996.

5.5 Companies Involved in the Pulp and Paper Expansion

The Indonesian Pulp and Paper industry is dominated by an oligopoly structure. The government has done much to promote the success of operators. In addition to tax and investment incentives they also impose a twenty percent tariff on all paper imports (Thompson and Kennedy 1996). The oligopoly comprises the forest industries largest conglomerates such as the New York stock exchange listed Sinmar Mas and Raja Garuda Mas groups. The largest players are expected to continue to dominate the industry given their level of investment and expansion plans (Thompson and Kennedy 1996)

The next section of this analysis examines some of the individual companies involved in the industry's rapid expansion since 1989. Particular attention is paid to certain facets of businessmen, companies and individual projects that shed light on overall industry trends.

5.5.1 Raja Garuda Mas

Raja Garuda Mas (RGM) is the parent company of the integrated pulp and paper manufacturer, Asia Pacific Resources International Holdings Limited (APRIL), that controls two major pulp and paper companies in Indonesia, PT Inti Indorayon Utama (PTIIU) and Riaupulp and Paper which operates the world's largest pulp mill. RGM, one of Indonesia's largest conglomerates, is owned by Sukanto Tonoto. Besides its pulp and paper holdings, RGM is also involved in construction and property development, banking, steel making, palm oil production and video cassette manufacture. Sukanto began building his empire in North Sumatra, working as a contractor for the state oil company, Pertamina, during its boom years in the 1960s. By 1973 he had invested his

earnings and attracted a substantial sum of state money to build an integrated plywood operation (*Far Eastern Economic Review*, 18 April 1991).

Sukanto's forestry success was built on strong links the military and government elite Suharto included. These connections provide help and protection and have enabled RGM to acquire more than 1.5 million hectares of government granted land concessions, mostly tropical rainforest, to provide raw materials for its plywood, pulp and paper, rayon and land for palm oil operations. Former military officers hold senior positions within the conglomerate. For example General Mantik, the former military commander in North Sumatra, sits on the board of RGM companies (Friedland 1991). Sukanto's ties to other members of the business elite have helped boost his empire. He has established profitable links with prominent businessmen such as Liem Sioe Liong, chairman of the Salim group, Eka Cipta Widjaya, chairman of the Sinmar Mas group, and Ibrahim Risjad, a land baron in Northern Sumatra (Friedland 1991).

RGM's largest investment in pulp and paper is the Riau Andalan mill in central Sumatra, which is the world's largest greenfield pulp mill with a capacity of 750,000 tonnes per year of fully bleached hardwood kraft pulp. The mill's construction and planning was undertaken by the Helsinki based consultants Jaakko Poyry. The mill is built to be capable of converting 4 million cubic meters of wood into more than 700,000 tonnes of pulp annually. The highly technically advanced mill cost approximately 750 million US dollars to build. Two thirds of capacity is for export, mainly to Japan, South Korea and Taiwan (Mitchell 1994).

The company has a fleet of 220, thirty-five ton log trucks. The mill requires 512 roundwood deliveries every day, or one truck delivery every three minutes to keep operating (Mitchell 1994). 70 percent of the pulpwood is supplied from the mill's own forest concessions, with the remaining 30 percent provided by outside contractors. The mill has 257,000 hectares of forest concessions that have been logged previously. Manager James Cikaliuk claims:

> We will not be cutting down virgin forest. Until our plantations mature, we will only use what we call mixed wastewood, which is wood left behind by the timber companies. What we are doing is cleaning up the mess and replanting (*Pulp and Paper International*, 11 September 1994 p.8).

Timber companies often logged only the most valuable large diameter species of hardwood, such as mahogany, meaning that the logged-over forest, although disturbed, would regenerate in time. Riau Andalan plans to clearcut 180,000 hectares of its concession and replant it with acacia magnum. By 2002 the mill plans to meet its entire raw material requirements with plantation wood.

Table 5 shows the involvement of northern suppliers in the project.

Table 5.5: Riau Andalan: Major Equipment Suppliers

Equipment	Supplier
Woodyard	
Log handling trucks	Valmet Transmec, Finland
Cranes	Kone, Finland
Debarking drums	Sunds Woodhandling, Finland
Chippers	Sunds Woodhandling, Finland
Fibre Line	
Digesters	Sunds Defibrator, Finland
Washing/screening	Sunds Defibrator, Finland Noss, Sweden
Oxygen delignification/bleaching	Sunds Defibrator, Finland Noss, Sweden
Bleached stock cleaning	Sunds Defibrator, Finland Noss, Sweden
Finishing	
Pulp machines	Voith, Brazil
Drying	ABB Flakt, Sweden
Bailing	Cranston, USA
Cutter layboys	Valmet, Finland
Bale presses	Valmet, Finland
Other	
Recovery boiler	Tampella Power, Finland
Power boiler	Outukumpu, Finland
Turbogenerators	Mitsubishi Heavy Industries, Japan
Gas Turbines	Solarturbines, USA
Evaporator	Tampella Power, Finland
Lime Kiln	Ahlstrom, Finland
Chemical plant	Chemetics, Canada
Oxygen plant	Nippon Sanso, Japan
Freshwater treatment	Ion Exchange, India
Effluent treatment	Ahlstrom, Finland

Source: *Pulp and Paper International*, September 11 1994.

Riau Andalan's output is one hundred percent ECF pulp although the mill is designed to be able to produce TCF pulp if market conditions require it. The mill requires 4750 cubic meters of water per hour which is supplied by the nearby Kampar river. The mill required the building of a port and the construction of 45 kilometres of railway. The project employs approximately 1000 people at a capital investment per position of 750,000 US dollars (*Pulp and Paper International*, September 11 1994).

RGM's original expansion into the pulp and paper industry was in 1986 through the construction of the controversial PT Inti Indorayon pulp and rayon mill in Northern Sumatra. The mill was designed to produce pulp and rayon, although it has focused almost exclusively on pulp production. The mill has the capacity to produce 220,000 tonnes per year of pulp (Hasanuddin and Quick 1992). Consultants from Canada's Sandwell Corporation created the initial engineering design and have been retained as advisors for the plant's operation.

The mill's site on the upper Asahan river proved controversial as it was feared that pollution of the river would seriously affect the livelihoods of the local population and that acidic discharge could impact negatively upon the Asahan Hydroelectric plant. Emil Salim, the then Population and Environment Minister, opposed the site of the mill. However, a presidential decree had been issued to facilitate the project and the Minister was forced to sanction the operation and only able to request a number of additional conditions regarding monitoring of pollution (SKEPHI 1993).

Basic material for the pulp and rayon mill was originally supplied from an 860 square kilometre stand of *pinus merkusii* planted during the Dutch colonial period (Lohman 1996). Much of this timber was sold off to firms involved in toothpick, chopstick and matches production and timber from the mill was sourced by clear cutting nearby mixed hardwood forests (SKEPHI 1993). The Asian Development Bank opposed the felling of the pine forest because of the effect that it would have on the bank-funded Simalungun

irrigation project. The pine forest was an important water catchment area for the project and the bank argued that it should be extended rather than depleted (Lohman 1996).

Indorayon's clearcuts, roads and plantations have displaced thousands of native Batak people in the Lake Toba area. Logging related droughts have depressed rice harvests over large areas, and Indorayon has provoked local resentment by blocking access to common pastures essential for buffalo raising and woodlands which villagers rely on for rattan. Furthermore the company has planted eucalyptus on ancestral graveyards and pollution of the Asahan river has resulted in the degradation of fisheries and the loss of village water supplies (Hasanuddin and Quick 1992)

A dispute that erupted in 1987 in Sugapa Village provides evidence of the divisive impact of the company's operations. The company obtained a three year lease on 52 hectares of land that served as a village commons previously utilised for grazing, fuelwood collection and gathering berries that were sold in a local market. The villagers refused to recognise the transfer as the land tenure violated local customary tenure. For the loss of land the village was paid a minimal amount per hectare, less a charge whenever a buffalo wandered onto the now company owned land. Ultimately this forced the villagers to sell their herds and protests to the company resulted in several village men being beaten. In 1989 after plantation workers were accused of attempting to rape a village girl, the villagers destroyed 16,000 eucalyptus seedlings in a plantation. Police arrested ten women involved in the uprooting and they were later sentenced to six months jail (Barber 1998).

SKEPHI, an Indonesian environmental group, alleges that the plant has leaked chlorine gas into the environment, pollution monitoring records have been falsified, its waste storage lagoon has constantly leaked, road construction and logging related to the mill have caused flooding and landslides, compensation for villagers displaced by the mill and its associated plantations has been extremely low, and that the company has been involved in illegal logging (SKEPHI 1993).

By 1990, the operation of the mill had prompted the formation of a pressure group, the KSPPM, which operated from within the Batak Protestant Church (HKBP) and was opposed to the Indorayon operations over environmental and land rights issues (Van Klinken 1997). The KSPPM was officially banned later in 1990 and the military has since been involved in a power struggle to wrest control of the church away from Archbishop Nababan. Troops have disrupted services and Nababan supporters have been tortured and intimidated (Van Klinken 1997).

Felling within Indorayon's concessions has caused a drastic drop in the level of Lake Toba's water level. According to the Indonesian Environmental Development Organisation, the operation of Indorayon's plant has caused 6 trillion rupiahs of damage to the environment. In 1993 villagers living near the plant, incited by Indorayon's poor ongoing environmental record, rioted and caused damage to various facilities at the plant (*Economic and Business Review Indonesia* 1996).

5.5.2 Sinmar Mas

Sinmar Mas (Golden Rays) is South East Asia's largest pulp and paper producer. The company controls its pulp and paper industries through the Singapore based Asia Pulp and Paper (APP). APP's two major investments in pulp and paper are through PT Indah Kiat Pulp and Paper, a major pulp producer, and PT Pabrik Kertas Tjiwi Kimia, the world's largest stationery producer. Sinmar Mas is owned by the Widjaja family and is one of Indonesia's largest diversified conglomerates.

Sinmar Mas has held the goal of producing one million tonnes of pulp annually since the start of its first pulp line (Pappens 1993). In 1994 Sinmar Mas's total pulp capacity was 1,200,000 tonnes of pulp of which 650,000 tonnes was integrated with its paper production. Company owned paper mills in China and India consumed 200,000 tonnes of pulp, leaving 350,000 tonnes for export to Thailand, Japan, Taiwan, China, Korea, India and Pakistan.

The company owns the Indah Kiat mill in Riau and the Wira Karya Sakti mill at Jambi in Central Sumatra, both with a capacity to produce 410,000 tonnes of bleached hardwood kraft pulp per year. The Indah Kiat mill in Riau was Indonesia's first green jungle pulp mill, starting up in 1984 with a second-hand pulp line shipped from one of its Taiwan. The mill was modernised and its capacity increased at the same time as the Jambi mill was built the early 1990s (*Pulp and Paper International* 9 September 1993).

Indah Kiat's major strength in the world market is its low raw material costs. Wood costs are around 100 US dollars per tonne at the mill gates. The Riau mill has a 300,000

hectare forest concession, and the Jambi mill holds forest concessions over 241,000 hectares. After clearcutting to provide the tropical hardwoods for the mill, the concessions are planned to be replanted with acacia and eucalyptus. In June 1995 *Pulp and Paper International* reported that Indah Kiat had been reprimanded by Indonesia's Minister of Forestry regarding the company's forestry practices. Indah Kiat's logging program was described as dubious and showing a lack of planning. SKEPHI has accused the company of illegal logging outside its concession areas (SKEPHI 1993). The company has denied that it is short of wood and claims that by 1997 all wood used in its mills will be from plantations (*Pulp and Paper International*, 5 June 1995).

Sinmar Mas's Tjiwi Kimia mill in Mojokerto, East Java, concentrates on high value-added grades, such as cast coated and carbonless copy paper. Australia is a major market for this output. The Tjiwi Kimia mill started in 1978 with a second-hand mill from Taiwan sites with a capacity of 12,000 tonnes per year. By 1994 it was the world's largest producer of stationery, constantly purchasing more and bigger paper machinery from Northern producers. For example, in 1993 Tjiwi Kimia purchased an idle carbonless copy paper mill in Finland. The entire plant was dismantled and rebuilt in Mojokerto. It has a capacity of 4000 tonnes per month and 80 percent of its output is for export (*Pulp and Paper International*, 13 February 1994).

Indah Kiat has been heavily criticised by SKEPHI for failing to carry out environmental impact studies, illegally hiring more than the number of expatriates allowed, trying to bribe local politicians and academics, not declaring proper dividends to shareholders, buying illegally logged wood, illegally appropriating local people's land and manipulating

daily production figures to avoid contributions to the reforestation fund (SKEPHI, 1993).

In 1992 the *Jakarta Post* reported that thousands of people downstream from the mill on the Cijung River had complained of skin diseases and were worried about pollution as they relied on the river for fresh water. Local fish farmers protested to the company over the death of their stock. According to a local politician, Sabrini Suharta, who accompanied the fish farmers on their protest, the company argued that it had no alternative place for its waste and that it was possible that the waste was highly toxic as the water treatment plants were not completed at that early stage of the plant's operation. The head of the Serang Development Planning Board was quoted as saying: "we can not do anything about the pollution because we do not have the necessary experts and equipment, although we know that dumping toxic waste without proper treatment is illegal" (*Jakarta Post*, 10 September, 1992).

Asia Pulp and Paper announced in 1995 that its majority owned subsidiary, Borneo Pulp and Paper, had formalised plans with the state owned Sarawak Timber Industry Development Corporation to build an integrated pulp and paper mill in Bintulu, Malaysia. The mill was originally planned to cost 710 million US dollars and have a capacity of 500,000 tonnes of pulp per year. Booming pulp and paper prices led to a planned production expansion to 850,000 tonnes per year and a cost of over 1 billion US dollars (*Pulp and Paper Week*, 30 October, 1995).

5.5.3 PT Kiani Kertas

Kiani Kertas is the pulp and paper interest of timber tycoon, Bob Hasan who has historically been a leading figure in forestry development in Indonesia. Hasan first came into contact with Suharto in Central Java in the mid 1950's. Hasan used his contacts with General Subroto, one of the founders of the Indonesian armed forces to have Suharto appointed to a position in army strategic command (Kostrad). It was from this position that Suharto secured power in the mid 1960's (*Far Eastern Economic Review*, 20 February, 1997).

Hasan has created a impressive business empire under Suharto's New Order Government. Hasan has built his family business as a supplier of food and clothing to the military into an empire that contains a number of shipping lines, several banks, an airline, pulp and paper mills, several of Indonesia's largest plywood companies in Kalimanis Plywood, Santi Murni Plywood and Kiani Sakti, and other large industries in glass and oil field equipment production (*Far Eastern Economic Review*, 20 February 1997). Hasan has played a major role in managing the Suharto family's investments. He has intervened on occasions to ensure maximum returns, guided government departments such as the Mines and Energy Ministry toward commercially favorable outcomes, and settled disputes between the Suharto children's conglomerates.

Hasan's major investment in the pulp and paper industry came in 1996 when it was announced that PT Kiani Kertas had gained a $US410 million syndicated loan to construct a 450,000 tonnes per year pulp mill in East Kalimantan. The site encompasses

3400 hectares of forest concession. Raw materials to feed the plant will eventually be supplied by a plantation joint venture between the Hasan owned PT Tanjung Redub Hutani and the state forestry company. 35 percent of the 80,000 hectare acacia plantation will be funded by the Hasan controlled company, with the remaining 65 percent of finance provided by the government reforestation fund (*Jakarta Post*, 8 January 1997). Typical of all Indonesian pulp mills, the plant will be running long before the first plantation trees are available for felling, or have even been planted. The plantation is not expected to be ready for cutting until the year 2001 at the earliest, and until then mixed hardwoods from natural forests are to be used.

The Kiani Kertas mill was announced after the 1996 crash in pulp prices, however Hasan dismissed pessimistic predictions, claiming that 20 to 30 pulp mills in North America were closing down so pulp prices would rise. Hasan, the chairman of a number of forestry related organisations such as the Association of Plywood and Panel Producers in Indonesia (APKINDO), the Indonesian Forestry Society (MPI), the Indonesian Association of Furniture Producers (ASMINDO) and the Association of Forest Concessionaires (APHI) that have been vocal in promoting Indonesia as a source of sustainably produced timber, claimed that campaigns against tropical timber products, including paper, were conducted by the West because of jealousy over Indonesia's resources and fear of Indonesia's competitiveness (Indonesian Centre for Environmental Law, 1996).

5.5.4 PT Barito Pacific

Barito Pacific is owned by another wealthy second generation Indonesian Chinese businessman, Prajogo Pangestu from Kalimantan. Like Hasan, Prajogo has close personal ties to President Suharto. Barito Pacific is the largest company listed on the Jakarta Stock Exchange. Its empire is founded mainly on timber production and in 1994 it controlled logging concessions covering 28,900 square kilometres (Rosenware 1994 p.26). The company employs more than 50,000 people (Dauvergne 1997). The total value of Prajogo's forest, land, logging infrastructure, and plywood mills is estimated at between $US 5 and 6 billion. Barito Pacific is also one of the largest borrowers of state funds with more than US 1 billion dollars in loans.

Barito Pacific's first investment in the pulp and paper industry is through its subsidiary PT Tanjung Enim Lestari Pulp and Paper (PT TEL). In March 1997 it was announced that PT TEL had secured a $US991 million syndicated loan from 25 foreign banks to build a pulp mill in South Sumatra. Two thirds of the loan is from export credit agencies in Finland, Sweden, Canada and Germany while the other third is from commercial lenders in the United States, South Korea, Japan, Scotland and Austria. The bank syndication includes ATT&T Capital Corporation, Fuji Bank, Sumitomo Trust, Bank of Scotland, Bank Austria and Hanil Bank (*Jakarta Post*, 15 March, 1997).

The pulp mill will cost US1,200 million to build, of which 30 percent will come from company equity. PT TEL is 51 percent owned by Barito Pacific with Sumatra Pulp Corporation owning 33 percent and PT Tridan Satriaputra Indonesia owning the

remaining sixteen percent (*Jakarta Post*, 15 March, 1997). Sumatra Pulp is jointly owned by Japan's Marubeni Corporation, the Overseas Economic Cooperation Fund and Nippon Paper Industries. PT Tridan Satriaputra Indonesia is a subsidiary of the Citra Lamtoro Gung Group which is owned by ex-President Suharto's eldest daughter, Siti Hardijanti Hastuti, known as Tutut (Vriens 1995).

The mill will have a capacity of 450,000 tonnes of bleached kraft pulp per year in its first phase of operation, with the second phase increasing its capacity to more than 1 million tonnes per year, although no date has been set for this expansion. PT TEL also plans to build an integrated paper mill in the long term. Germany's Klockner Industries is the turnkey contractor, while Nippon Paper Industries will operate the mill. The mill's entire pulp production will be exported through two companies, Japan's Marubeni and Sweden's Cellmark. 70 percent of production is destined for Asian markets while 30 percent will be sold in Europe (*Jakarta Post*, 15 March, 1997).

Raw material for the mill will eventually come from an industrial plantation previously established by Barito Pacific and the state forestry company. The establishment of the plantation has been highly controversial and received support at the highest levels. Friedland and Schwarz (1992), writing in the *Far Eastern Economic Review*, report that in a leaked memo Prajogo asked Suharto to encourage forestry minister, Hasjrul Harahap, to facilitate the paperwork and financing for the industrial plantation. Suharto responded by jotting a note to Hasjrul on the memo that he should fulfil all of Prajogo's requests.

International environmental group, Down to Earth, reports that the legal aid bureau in Palemberg is representing local people who have lost their land and plantations of rubber and fruit trees with little or no compensation. Land was obtained for the plantations through compulsory purchase in the face of large scale local opposition and mature rainforest is being felled to establish the plantations with the cleared wood being used for plywood and pulp production (Down to Earth, 1997). Villagers opposing the development have been subjected to torture by security forces. Three representatives of Menamang village in the Kutai district traveled to Jakarta to present their case to the National Human Rights Commission and one of these three claimed that he had been beaten and burned with a cigarette after refusing to accept compensation for land taken by the plantation company. Promises of compensation for villagers never materialised while forged documents were used to claim that villagers had accepted and received compensation (Down to Earth, No29, 1996). Investigations by Kutai district authorities found that compensation claims were justified. The Indonesia Media Network reported that some villagers accepted compensation while those that did not were subjected to harassment and torture (Indonesia Media Network, February 3, 1996).

5.6 The Political Ecology of Forest Exploitation in Indonesia

Colonisation altered native societies in Southeast Asia and subjected their economies to the pressures of a world capitalist system. Policies associated with capitalism brought new ideas and customs such as property rights and caused social displacement through the appropriation of surpluses, timber harvesting, mining and a focus on cash crops for export (Hurst 1990). The exploitation of natural resources was a prime reason for establishing colonies in Southeast Asia. With the exception of Thailand most countries in

the region were subjected to exploitation by Western powers for decades (Hurst 1990). Many of the circumstances that have been factors in the destructive relationship between forest industries and the environment were created during the colonial period (Hurst 1990).

Prior to the introduction of Suharto's New Order the forests of Indonesia held little economic significance. As such deforestation rates were quite low (Barber 1998). Estimates now indicate that since the 1950s an area the size of Germany has 'been either logged or converted to agriculture and in many cases degraded into scrub and grassland' (Barber 1998 p.7). After the 1960s Indonesian forests provided a rich supply of 'state revenue, a resource for political patronage and a safety valve for scarcities of land and resources in densely populated Java' (Barber 1998p.7). Policies applied to the forests were crucial in spreading New Order ideological, political, security and economic objectives into the hinterlands such as Kalimantan (Barber 1998).

Increasing levels of resource extraction have made the forests into an arena for increasingly violent social conflicts (Barber 1998). In these conflicts, 'the interests of local communities are often pitted against the interests of the state, its clients and its agents' (Barber 1998 p.7). Large scale extraction and plantation projects within Indonesia have caused a significant degree of social conflict and displacement.

With the state's active support the timber and forest products industry has developed from virtually nothing in the mid 1960s to the point were it had an annual output of approximately $9 billion by 1994 with $5.5 billion of that in exports (Barber 1998). 'The

industry has grown into a highly concentrated and well connected political and economic actor dependent on cheap resources, accustomed to high levels of profit and able to pass on the environmental costs of their activities to local communities, the state and society at large' (Barber 1998 pp7-8).

The international trade in tropical timber products has exerted a pervasive and powerful influence on the political structure in Indonesia. The granting of timber concessions is often made within the framework of a corrupt network of political patronage or as a means of personal enrichment. Concessions are often granted by politicians rather than forestry officials, as rewards for political or financial support from influential corporations or individuals. The granting of concessions to high ranking generals is an obvious example.

This experience has not been unique to Indonesia. In the Philippines President Marcos transformed the concession system into a way to reward close associates for loyalty. Marcos supporters such as Defence Minister Juan Ponce Enrile controlled large shares of the few hundred companies with timber leases (Broad and Cavanagh 1993).

Timber and politics are also closely linked in the Malaysian state of Sarawak. For many years the Minister of Environment and Tourism headed of one of Sarawak's largest timber companies, whilst the leaders of the major political parties belonged to commercial groups which between them held concessions to over 30 percent of the forests (Drakis-Smith 1992).

In Malaysia as in Indonesia, wood prices, timber charges, log prices and sawnwood prices have been kept artificially low at every stage of forestry development. The result has been a series of timber booms and the development of processing capacity that exceeds the forests' sustained yield capacity. Chinese forest entrepreneurs have been the major beneficiaries of distorted political processes and have built global scale companies on the basis of wealth created from forest exploitation. Sibu in Sarawak is the headquarters of some of the largest timber groups in the world. For example, the Samling group of companies controlled by ethnic Chinese businessman Yaw Teck Seng and his family controls around 1.5 million hectares of forest in Sarawak, 1.69 million hectares in Guyana, 800,000 hectares in Cambodia and various smaller holdings across the globe (Greenpeace International 1997). The Rimbunan Hijau group of companies has timber concessions in Sarawak of around 800,000 hectares, dominates forestry in Papua New Guinea and has forestry interests in New Zealand, China, Guyana, Russia and Brazil. Rimbunan Hijau owns a 40 percent share in Limlang Trading which holds a 310,000 hectare forest concession in Sarawak. Limlang Trading is controlled by James Wong Kim Min who was Minister for Environment and Tourism in Sarawak (Forbes 1995).

The expansion of the Indonesian pulp and paper industry, as with other forest based industries has been dominated by a group of wealthy Chinese businessmen, who have close ties to the indigenous power elite. Chinese, who make up less than three percent of the Indonesian population, control up to 75 percent of the economy (Shari 1995).

The emergence of the military as the dominant political force in Indonesia greatly strengthened the position of a substantial number of Chinese individuals who have long

been their financiers and business operatives. When the military came to control state economic power it was these individuals who were given opportunities to expand their operations and become major international-scale capitalists in the Suharto era. They secured trading monopolies and privileged access to state bank credit, contracts for the purchase and supply of materials for state corporations and projects and most importantly in terms of this analysis, the rights to exploit large tracts of forest. Through logging and plywood ventures several of these Chinese financiers built the asset base necessary for expansion into the pulp and paper industry.

While alliances with political and bureaucratic power have been an integral part of the development of Chinese capital, other factors have been crucial. The access to the financial and corporate networks of overseas Chinese capital in other nations has given the Chinese financiers a source of capital and corporate partnerships. The major Chinese business groups have also been able to access at corporate level international capital networks. Thus the Indonesian political and military elite and international investors were attracted to the small coterie of Chinese capitalists as they had the necessary corporate, capital and distribution apparatus to be produce profit (Robinson 1986). Similarly, it was because of these existing networks and infrastructure that the larger Chinese business conglomerates were able to take full advantage of the government policy toward import substitution and to place controls on foreign investment (Robinson 1986).

The destruction of tropical forests in Indonesia is often compared to the transformation of temperate forests of Europe or in North America (Ooi 1990). However the scale of

the transformation of the Indonesian rainforest is greater and the historical scale much shorter (Ooi 1990). Technologies such as the chainsaw, tractor, bulldozer and even helicopter have allowed large scale conversion to occur in a relatively short time frame. The internationalisation of the market for tropical timber products has provided a powerful spur to forest exploitation and clearing and new technology has provided the means to accommodate this international demand. Multinational Corporations provided the technology that allowed the extraction of enormous quantities of dipterocarp logs. In East Kalimantan in the 1960s many areas of forest were still logged by hand. Japanese buyers requiring faster extraction provided credit for mechanisation and exchanged equipment for dipterocarp logs.

Growth in logging and the international trade in tropical timber products has played an important role in Indonesia's integration in the global economy in postcolonial decades. The areas of forests to be exploited, at what time and rate and for what purpose is no longer a decision made locally according to village custom. Rather they are now partly made in global financial capitals such as Tokyo, Bonn, Washington and London. The logging of the forests of many areas in Indonesia has to a large extent been organised and financed by Japan which has remained a major consumer of forest products. Attempts to combat excessive logging will be frustrated while Japanese demand for tropical logs remains strong and the industry remains profitable (Lohman 1993). Debt financing and structural adjustment policies implemented by the World Bank and the International Monetary Fund have encouraged timber extraction and land use conversion practices to earn maximum export earnings. These policies have been implemented at the cost of long term sustainable forest use (Barbier 1993). Multinational timber enterprises from

industrial countries were among the major beneficiaries of log extraction in the tropical nations in the 1970s, although the multinationals have steadily withdrawn from the forests of Southeast Asia (Repetto and Gillis 1988). By 1980 they had divested themselves of nearly all their logging operations in Southeast Asia, their places being taken by smaller multinationals from developing countries. However many of the large Japanese and South Korean trading companies continue to be major buyers of Southeast Asian tropical timbers.

The activities of Japan's general trading companies (*sogo shosa*) have impacted heavily on the development of timber industries and initiated widespread environmental degradation in Indonesia. The largest *sogo shosa* form the core or command centres of powerful and complex industrial groups such as Mitsubishi, Mitsui, Itochu, Sumitomo and Marubeni (Dauvergne 1997). These companies specialise in joint ventures, trade facilitation, research and development and the transport and marketing of raw materials. However their core function has traditionally been to facilitate trade in materials such as wood products, iron and steel, cotton, fuel, minerals, food and chemicals. Such companies account for 30 percent of Japan's total exports and 44 percent of imports (Dauvergne 1997). They are major importers of raw materials to support domestic processors. Occasionally they will hold shares in overseas resource extraction companies but prefer to operate as intermediaries, providing capital and infrastructure to resource producers in exchange for favourable purchasing terms (Dauvergne 1997).

Dauvergne (1997) argues that, unlike most multinational corporations, *sogo shosa* do not try to maximise profits. In return for a commission they provide services to promote and

maintain trade, including supplying a constant flow of cheap raw materials. To facilitate the tropical log trade they organise finance for loggers, shippers, exporters, plywood manufacturers, wholesalers, retailers and final consumers and often they have postponed loan repayments until the firm sells its product (Dauvergne 1997). Funds provided by *sogo shosa* have been critical in the development and maintenance of the tropical timber trade in Southeast Asia.

The economic rationale adopted by the Japanese trading houses helps propel unsustainable resource extraction. To function as trade intermediaries they traditionally receive low profit margins, relying instead on large volumes of cheap natural resources which ignore social and environmental costs to generate income (Dauvergne 1997). The low prices achieved as the result of vertical trade integration helps promote wasteful consumption (Dauvergne 1997).

The history of the timber trade in Southeast Asia indicates that Japanese traders have shown little concern for natural resource preservation. After log stocks have been exhausted or government policy changed to limit the wholesale export of logs, traders have shifted their operations to new sources of timber. Initially the Philippines was the main source of logs followed by Indonesia and Malaysia. Resource depletion in these countries means forests elsewhere in the world, such as New Guinea and Guyana, are now being targeted.

Primary forests have historically provided cheap and plentiful logs. In contrast reforestation is expensive and time consuming. As such Japanese companies have

generally avoided investment or research in reforestation (Dauvergne 1997). After attacks from environmentalists, Japanese companies have attempted to improve their image through investing in a number of small reforestation projects (Dauvergne 1997).

The rise in international trade in tropical timber products from Southeast Asia has resulted in a boom and bust export pattern where high initial export earnings are followed by the depletion of old growth forests and the collapse of domestic processing industries. This pattern is consistent with the experience of West Africa in the 1950s and 1960s.

The non-sustainable practices of timber based industries operating in Indonesia should be interpreted with reference to the prevalent economic and social conditions. Rapid rates of population growth, heavy indebtedness and high levels of unemployment have been typical. Under such circumstance countries often consider few options other than to increase the rates of exploitation of natural resources. However it is not just economic difficulties which encourage deforestation. Economic success and greater individual wealth in Indonesia, which has been partly fuelled by the exploitation of forest resources, increases demands for wood products, agricultural land, water, electricity from hydro-electric sources and residential and industrial sites. These demands are usually fulfilled at the expense of forested land (United Nations Food and Agriculture Organisation 1997).

Many authors argue that the huge levels of external debt held by many tropical countries has created a short-sighted policy environment where deforestation occurs. Debt can increase the need for foreign exchange earnings which can be most easily met through

the export of timber and other internationally valuable products. Debt can also create an economic environment detrimental to economic growth and force the rural poor into the extensive use of marginal lands. High debt levels can also force governments into a position where they reduce expenditure on environmental protection (Adger and Brown 1994). Large-scale deforestation within Indonesia preceded the debt crisis. Debt has however, provided a powerful spur to continue the over-exploitation of forest resources. The desire to increase export earnings has led Indonesia to support the establishment of export orientated crops such as rubber, palm oil and pulpwood for paper manufacture and these usually entail deforestation in order to make way for their establishment.

Poor administration of logging concessions, inefficient taxation regimes, and the granting of short term concessions often leads to an undervaluation of the resource and contributes to the over-exploitation of the forest. This impacts and contributes to the debt crisis as resources are drawn down for less than their full value, meaning less future income.

Forestry is at the centre of environmental policies adopted by Indonesia over the past two decades. National forestry policies include a limitation or a ban on the export of logs, a conservation policy including the designation of national parks and forest reserves, various agro forestry programs and reforestation projects. The success of these policies remains questionable as often they are in direct contradiction with other development policies such as agricultural expansion (Bernard and DeKoninck 1996). Conservation policies are often ignored as the central government lacks the resources or the desire to guarantee effectiveness (Bernard and DeKoninck 1996).

To meet demand and generate foreign exchange earnings many tropical countries are decimating their forest resources by exploiting them at rates which far exceed the rates of replacement. The industrialised countries' continued demand for tropical timber products is unlikely to decrease while it is being sold at prices well below the cost of replacement. Some countries in Southeast Asia have exhausted their forest stocks and have become timber importers. Currently many Southeast Asian countries are undergoing major restructuring of the industrial processing sector to adapt to reduced raw material supplies, smaller logs, and increased dependency on plantation wood. Many Asian companies are seeking to internationalise their operations as domestic forest resources decline. Indonesian, Malaysian and Thai firms have recently expanded operations into Cambodia, Myanmar, Papua New Guinea, the Solomon Islands, Vanuatu and beyond Asia into Latin America and Africa (United Nations Food and Agriculture Organisation 1997).

5.7 The Environmental Impact of Forest Based Industries

Rapid deforestation in the tropical world has received worldwide attention, research and debate. Inherent within this attention is the recognition that tropical forests, in addition to being sources of wood and other products, also provide a number of protective functions. Primarily these include the conservation of water catchments, soil, and plant and animal genetic resources. Their role in climate regulation as carbon sinks and the greenhouse implications of large scale clearing and burning of tropical forests has been highlighted more recently (Adger and Brown 1994).

In the late 1940s Southeast Asia had the highest percentage of forested land in the world. Annual deforestation rates over the past fifty years have become equal to or greater than those elsewhere. The destruction of the forest is considered by most commentators as the most important environmental issue in Southeast Asia.

Bernard and DeKoninck (1996) attempted to represent the geographical distribution of the forests of Southeast Asia to illustrate the territorial magnitude of its retreat by comparing its geographical distribution at two different dates. This was done through the compilation of two maps representing the basic forest formations in Southeast Asia in 1970 and in 1990.

Comparison of the two maps showed a significant retreat of all types of forest in Southeast Asia. Rainforest, by far the richest type of forest in terms of biomass and overall resources, receded considerably.

Changing definitions of forest type confuse the interpretation of secondary forest loss. With this difficulty being noted, Bernard and DeKoninck (1996) still conclude that large expanses of secondary forest have been lost across Indonesia, with Sumatra and the province of West Kalimantan being the most affected. Swamp forest continued to decline, most noticeably in Western Sumatra and Southern Irian Jaya.

Deforestation statistics, including the most recent from the FAO's 1997 *State of the World's Forests*, are presented in Table 5.6. Table 5.7 shows the change in forest cover between 1990 and 1995. FAO figures on deforestation are reputed to be very conservative and generally lower than those of most other analysts (Bernard and

DeKoninck 1996). Figures for countries other than Indonesia are included for purposes of comparison. FAO figures concerning deforestation in Southeast Asia in the 1970s and 1980s have been revised upwards, reflecting the recent recognition of the intensification of deforestation in the region.

Table 5.6 The Extent of Forest Cover in Eight Southeast Asian Countries between the late 1960s and 1990s

Countries	Total land area km^2	Extent of Forest Cover					
		1965		1988		1995	
		km^2	%	km^2	%	km^2	%
Burma	677,000	453,740	67.0	323,840	48.0	271,510	40.1
Thailand	513,000	240,700	47.0	141,650	28.0	116,300	22.7
Cambodia	181,000	133,720	75.0	113,250	63.0	98,300	54.3
Laos	237,000	150,000	63.0	129,000	54.0	124,350	52.5
Vietnam	330,000	155,200	47.0	93,090	28.0	91,170	27.6
Malaysia	330,000	241,790	73.0	193,400	59.0	154,710	46.9
Indonesia	1,913,000	1,238,000	65.0	1,134,330	59.0	1,097,910	57.4
Philippines	300,000	170,500	57.0	107,500	36.0	67,660	22.5
Total	4,481,000	2,782,650	62.0	2,236,060	50.0	2,021,910	45.1

Source: FAO 1977, 1989, 1997.

Table 5.7 Change in Forest Cover in Southeast Asia 1990-1995

Countries	Total Forest 1990 Thousand Hectares	Total Forest 1995 Thousand Hectares	Total Change 1990-1995 Thousand Hectares	Annual Change Thousand Hectares	Annual Change Rate (percent)
Burma	29,088	27,151	-1,937	-387	-1.4
Thailand	13,277	11,630	-1,647	-379	-2.6
Cambodia	10,649	9,830	-819	-164	-1.6
Laos	13,177	12,435	-742	-148	-1.7
Vietnam	9,798	9,117	-676	-135	-1.4
Malaysia	17,472	15,471	-2,001	-400	-2.4
Indonesia	115,713	109,791	-5,922	-1,084	-1.0
Philippines	8,078	6,766	-1,312	263	-3.5

Source: FAO 1997.

Tables 5.6 and 5.7 confirm the extent of forest loss illustrated in Figures 1 and 2. There has been a significant loss of forest across all nations in Southeast Asia. Indonesia, which

holds the greatest forest resource, suffers by the far the greatest amount of forest loss annually, with a yearly depletion of over 1,000 hectares.

However ascertaining the exact rate of deforestation in Indonesia is complicated by the lack of a universal definition of the term. During the 1980s deforestation was defined in several distinct ways: as the transformation of primary closed forest to any other formation; as the loss of any kind of closed forest; or as the loss of forest land (Adger and Brown 1994). This inconsistency in definition has led to a wide range of estimates of forest cover and rates of deforestation.

FAO estimates are perhaps the major global indicator of forest loss. The *1990 Forest Resource Assessment* uses the following definition: *forests are defined as ecosystems with a minimum of ten percent crown cover of trees and or bamboos, generally associated with wild flora, fauna and natural soil conditions and not subject to agricultural practices. Deforestation refers to a change of land use with the depletion of tree crown cover to less than 10 percent* (FAO 1990). Changes within the forest class, such as a change from closed to open forest, are termed 'degradation' and are not reflected in the deforestation estimates.

The definition of deforestation adopted has important implications for forest policy, particularly when the causes of deforestation are being investigated. Extractive timber industries have undoubtedly had major impacts on the tropical rainforests of Indonesia. Logging can be classified as either clearfelling or selective. Clearfelling involves the loss of forest cover and is reflected in the deforestation statistics. Selective logging, the removal of commercially valuable species, varies in its impact on the forest and can have

a number of different degrading effects. These include the loss of nutrients, soil erosion, declining biodiversity and changes in the local climate (Adger and Brown 1994). In Indonesia mechanised logging results in between 40 and 60 percent of all trees being killed in addition to those already harvested. Up to 30 percent of the surface soil is laid bare in the form of roads and skid trails (Adger and Brown 1994).

Less environmentally destructive extractive techniques require careful management and long term security of concessions. Typically harvesting in tropical forests has been more like mining and causes destruction of the ecosystem (Adger and Brown 1994). It is carried out at a frenetic pace to ensure a profitable return on capital investment, such as machinery. Bad felling and irresponsible management practices are common (Adger and Brown 1994).

Forest degradation related to timber extraction is often not reflected in deforestation statistics, which measure only the extraction of most of the trees to the point where less than 10 percent of the cover remains. The data available tend to underestimate the problem and primary blame for deforestation is often attributed to secondary causes. Numerous authors and organisations maintain that timber extraction's biggest role in deforestation is as a facilitator for shifting cultivation, whereby roads provide access into the forest for settlers.

The Indonesian government and international agencies have argued that deforestation can be blamed on shifting cultivators. Traditional shifting cultivating involves a plot of forest being felled and burnt, providing fertile ash in which to grow crops. After one to

three years, as weeds proliferate and fertility declines the plot is abandoned and left to revert to forest. After a fallow period, ideally of twenty years or more, the cycle is repeated. Shifting cultivators, because they use slash and burn as their main method of land clearing, are often automatically identified as the culprits of deforestation (Bernard and DeKoninck 1996). In 1990 studies by the World Bank and the FAO blamed shifting cultivators for most of Indonesia's forest loss (Pye-Smith 1997). This reflects the conventional view held by many academics and policy makers which views shifting cultivators as tradition-bound peasants unable to manage their environment. Myers (1994) makes the distinction between shifting and shifted cultivators. Shifted cultivators are categorised as land pioneers who destroy the forest and replace it with permanent agriculture. They are no doubt responsible for a large proportion of the deforestation in Southeast Asia through land use change. Often they settle on forest lands opened up and degraded by the logging industry and definitions of deforestation tend to over-represent their role in the process (Myers 1994). Migration to forest areas has been encouraged by governments to relieve demographic and economic pressures and avoid politically difficult problems. Indonesia's transmigration program has seen over 1 million people, mainly from the highly populated island of Java, resettled on the sparsely populated outer islands.

Traditional shifting cultivators, often presented as the culprits behind deforestation, are now considered by some authors to be practicing a form of sustainable agriculture (Bernard and DeKoninck 1996). A recent study by the International Institute for Environment and Development found that shifting cultivation can have seldom acknowledged environmental benefits. For example, in Thailand the Karen and Lua

people have developed sophisticated systems of community organisation to control forest fires (Pye-Smith 1997). Shifting cultivation using long fallow periods can help retain high levels of biodiversity. A survey in one Lau village found 223 plant species on land that had been cultivated then left fallow for 10 years, which compared well against the 319 species found in virgin forests in the same area (Pye-Smith 1997).

In many areas of Southeast Asia land scarcity, logging, new markets and aggressive government policies have forced shifting cultivators to decrease fallow periods, and implement an unsustainable land use pattern. Colchester and Lohman (1993) argue that inequitable agricultural policies operating in many developing countries are central to land use changes. The non recognition of traditional land rights in agricultural systems results in the marginalisation and impoverishment of small farmers and leads to increased demands on forest areas. This process is facilitated by government policy and the development of roads and other infrastructure.

The timber industry has constantly claimed that it plays a negligible role in forest loss and that most deforestation is caused by agricultural clearance or fuelwood collection. Population growth rather than industrial exploitation has been blamed as the underlying problem. A report by the World Wide Fund for Nature in 1996, which used the survival of biodiversity as a major criterion, found that the timber industry is the most important cause of loss and forest degradation worldwide. Areas of high biodiversity tend to contain the oldest, and thus in many cases the largest and most commercially valuable trees. Often natural forests are virtually unclaimed as they are under the stewardship of politically weak indigenous groups or nominally in state control. Forests with high

biodiversity are by their nature likely to draw the attention of the global timber industry and are likely to be exploited (WWFN 1996).

Plantation establishment poses a significant risk to the remaining tropical forests of Indonesia. The economic significance of the pulp and paper industry to the government is shown in a 1992 ministerial decree which stated that all permanent forest within 100 kilometres of a pulp mill may be used for plantation development (Barber 1998). According to Barber (1998) 'if this right were granted to all planned pulp mills, 62.8 million hectares of forestland would be affected, fully one third of the nation's land area, a scenario that seems improbable' (p.31).

The pulp and paper industry has put forward the argument that timber estates represent a sustainable and renewable type of forest management, a claim that Burbant (1998) describes as more than a mild exaggeration. The ecological concerns raised by timber plantations are twofold. Firstly, mono cultivation means a serious reduction of biodiversity to such an extent that timber plantations are no more ecologically diverse than oil palm or coconut plantations. Secondly, because the growth rates of the species planted is so high, soil nutrient depletion is a likely result (Burbant 1998).

The problem of low biodiversity is exacerbated when the land on which plantations are being established is taken into account. Rather than being established on degraded land the majority of timber estates have been established on previously unlogged primary forest (World Bank 1994). The incentives for this are clear. Degraded land exists in scattered patches and is therefore impractical to manage, just as land overgrown with

alang-alang grass has low soil fertility and is expensive to convert. If natural forest is converted into timber estates, the standing stock of trees may be felled to feed the plywood factory or pulp mill in the initial stages until the plantation trees mature. The profits to be derived from the clear cutting of large tracts of primary forest to make way for the timber estates are enormous. The logs from the clearcutting program belong to the participating company but are not included in their normal logging quota, meaning extra profit.

The logic of high volume investment also militates against the use of degraded land for the establishment of plantations for pulp mills. Major companies undertaking investments of more than a billion dollars in pulp mills are unlikely to tie the venture to the vagaries of degraded land. Rather they are more likely to look for the best soils and water supply, even if these are underneath existing forest (Mattoon 1998).

Timber extraction increases the risk of fire in tropical forests as it opens the canopy, encouraging the growth of flammable grasses and shrubs. At times of drought the drying out of the forest caused by logging, the waste wood left from operations and the methods of land clearing involving fire employed by plantation companies and traditional agriculturists combine to cause major forest fires that result in deforestation. Fires that were deliberately lit consumed an estimated two million hectares of forest in 1997. The Indonesian government initially laid the blame for the fires on slash and burn farmers however satellite images showed that approximately 80 percent of the fires originated in lands controlled by the plantation industry.

Areas of Indonesia, particularly in Kalimantan, have suffered extensively from fires with regular outbreaks from the early 1980s onwards in drought years. Historically major droughts are not unknown on Borneo and caused widespread starvation among the Dayak tribes in the 1880s. Widespread fires, despite the use of traditional slash and burn agriculture, were unknown (Hurst 1990). The outbreak of fires on the Indonesian archipelago during 1997 and 1998 was the most devastating and has caused widespread environmental problems throughout Southeast Asia. Smog from the fires covered an area of more than 3,200 kilometres east to west, impacting on six countries and approximately 70 million people (Brauer and Hisham-Hashim 1998). The smog contained polycyclic aromatic hydrocarbons from burning organic material and when mixed with existing smog in cities it produced a variety of health impacting pollutants. Massive greenhouse gas emissions, widescale disruption to transport and economic activity, the decimation of wildlife populations and a host of other impacts led Brauer and Hisham-Hashim (1998) to classify the 1997 Indonesian fires as one of the most broad-ranging global environmental disasters of the century. Estimates of the economic loss to the timber industry are not yet available but will be immense. Smaller fires on East Kalimantan in 1982 and 1983 destroyed timber with an estimated export value of US$5.5 billion (Hurst 1990).

The loss of forest in Southeast Asia may change climatic conditions and make the region more susceptible to drought and therefore impact negatively on forest industry futures and the ongoing viability of remaining forest ecosystems. Evidence regarding the relationship between rainfall and forest loss is strongest from the West African experience. At the beginning of the twentieth century the West African coastal

rainforests covered around 500,000 square kilometres. Since then up to 90 percent have been cleared to make way for farms and other kinds of human activity. Substantial growth in timber harvesting, overgrazing, mining, and the expansion of arable land are the main factors behind the decline (Pearce 1997). As forests were lost more of the rain falling on the coastal regions percolated into soils or flowed directly to the sea. Evaporation was reduced which affected rainfall in drought prone countries in the interior such as Mali and Niger. Thus studies by the Centre for Global Change Science at the Massachusetts Institute of Technology argue that droughts in West Africa over the past twenty years may have been caused by the destruction of rainforests in countries such as Nigeria, Ghana and Cote d'Ivorie (Pearce 1997).

5.8 Conclusion

Timber extraction encouraged by international demand for cheap timber products has had a significant, though under-recognised impact on the forests and politics of Indonesia. International involvement in the establishment and ongoing viability of extractive timber industries has been vital. Profits generated by the industry have been immense due to strong international demand, vast resources, large subsidies and non-recognition of native rights.

Traditional land-holders have been blamed for the destruction of forests to which they have systematically been denied access and have received virtually none of the wealth created through forest exploitation and trade. Continued attempts to blame traditional agriculturists for large scale forest loss reflects the cultural biases and economic self

interests of political elites and governments within Indonesia and the international community.

The state has been a willing partner in the commercial exploitation of the forests and interlocking state and business interests are common. Indonesia has witnessed widescale corruption in the granting of forest concessions to favoured economic and political allies. Growth in international trade in tropical timber products has created an extremely wealthy rent seeking class who now wield significant influence over domestic politics and economic affairs. Wealth created through forest destruction is often a necessary component in the maintenance of the dominant political and economic regime. Environmental change is rarely neutral in its political and social impacts and in this case it is easy to distinguish the winners from the losers. Moreover this case study provides evidence of the way economic advantages gained through subsidies and corruption in one nation are often used by companies to expand export based forest industries into other countries. This results in the importation of similar management practices and results in comparable environmental, economic and political disasters.

The expansion of the Indonesian pulp and paper industry reflects a global industrial relocation to secure cheap, plentiful resources and access to markets. Reduced forest availability in other countries, caused by overcutting and increased environmentalism, has led to the search for new material sources. The most obvious manifestation of this trend is the wholesale dismantling of pulp lines and paper mills in the North Hemisphere and their reassembly in Indonesia.

Lohman (1996) argues that the Indonesian industry exhibits a number of shared characteristics. Firstly, the pulp and paper industry, as with most industry in Indonesia, is controlled by a small number of families with close ties to President Suharto. Secondly, most of the capacity is focused on export. Thirdly, all projects involve heavy northern involvement. World Bank studies identified industry opportunities, while consultants planned projects and identified funding sources. Acting as brokers and coordinators forest industry consultancy companies such as Finland's Jaakko Poyry are skilled at using 'aid' money and corporate contracts to bring together Northern machinery suppliers and Indonesian elites with power over land, forests, labour and finance in a way which benefits both. Acting through an informal network of former colleagues, friends and like minded technocrats in donor agencies, consultants are able to use public funds to build up a private forestry industry sector in Indonesia' (Lohman 1996 p.30)

Finance for the expansion has been provided from numerous national and international sources. Bilateral aid agencies, export credit agencies and multilateral development banks have all participated. Private finance has come from a variety of North American, Japanese and European banks. In addition Asia Pulp and Paper (APP) and Asia Pacific Resources International Holdings Limited (APRIL) have been floated on the Wall Street Stock Exchange to provide funds for expansion plans (Shari 1995). Foreign companies such as Nippon Paper own large percentages of some mills and act as operators. Other companies act as export outlets for mill production and Northern machinery suppliers have been at the forefront in supplying the large and expensive machinery necessary for the mills.

The involvement of the Indonesian economic elite has been vital as these firms have been able to provide the political access necessary for the projects to proceed. Moreover, Northern companies run the risk of an environmental backlash in important markets if they are perceived to be destroying rainforests in Indonesia. For example, in 1989, one of the world's largest companies, Scott Paper, was forced to withdraw from a planned pulp mill in Irian Jaya after a concerted campaign and boycott threats (SKEPHI 1989).

A fourth shared characteristic of the Indonesian mills is that in their early stages they are fed by natural forests (Lohman 1996). It is the availability of this forest resource that gives the industry its competitive advantage as a low cost producer and that has attracted the foreign capital necessary for it to proceed. Plantations are promoted as improving degraded and unused land, however they have not been established on the widespread *alang alang* grasslands which have historically proved prohibitively expensive to convert (WALHI 1992).

The preferred model of development has been for companies to secure large logging concessions, clearcut them and then replant pulpwood monocultures. Government policies have encouraged this process. The Reforestation Fund, established to restore logged areas, is used to provide equity capital and interest free loans to create plantations by converting natural forest. Entrepreneurs planning to establish a plantation may claim any wood felled to prepare plantations and then use the proceeds to meet the capital costs of establishing the mill (Durkin 1993). Investors therefore favour clearcutting unlogged or lightly logged forest to create plantations rather than using degraded land.

The conversion of natural forest to monoculture plantations results in a significant loss of biodiversity. Introduced trees are grown as crops, replacing the diversity of habitat. Monoculture plantations are prone to disease and pest infestation and indigenous plants, insects and animals are often considered pests. Plantations also promote fire and their more open structure dries out the forest floor, changing the soil microclimate essential for nutrient recycling (Lohman 1996). Plantation yields fall after each logging cycle. This is addressed by fertiliser application and can lead to further environmental problems.

People living close to pulp mills and plantations have been dispossessed from their traditional lands with little or no compensation and suffered the pollution of vital waterways. Sustainable forest based economies and cottage industries have been severely disrupted, increasing rural poverty (WALHI 1992). Affected people have been denied an effective voice of protest through the suppression of community groups, beatings, torture and the jailing of dissidents.

Thus: 'the ideology of an industry dominated by large mills, finally, tends to be one which privileges a supposedly "global" demand for pulp over varied local demands for individual farm plots, diverse native woodlands, clean water and air, and the maintenance of fine grained craft practices which make possible local control over native forests and wetlands'(Kerski 1995 p.143).

Expanding pulp mill production poses a serious threat to the ongoing viability of the tropical rainforest ecosystem in Indonesia. These mills are heavily indebted and consume vast amounts of wood daily. Failure in planned plantations combined with high debt

levels will provoke added pressure to open more areas of forest for commercial logging. The Centre for International Forestry Research (CIFOR), based in Java has argued that that the government has promoted too much local capacity without knowing where the wood is going to come from, as the industrial plantations either do not exist or are not productive enough (*Pulp and Paper Week*, 6 May 1996). Studies by the Indonesian Ministry of Forestry found that only thirteen percent of the four million hectares designated for pulpwood plantations had been planted by the end of 1995. Furthermore the ministry stated that that if the pulp industry develops to schedule natural forests will have to be pulped because the opening of wood plantations is not keeping pace with demand (*Pulp and Paper Week,* 6 May 1996).

Timber theft and timber smuggling is widespread in Indonesia. Moreover the scale of the illegal operations is so extensive that it could only be carried out by well financed, properly equipped operations and involve the collusion of forestry officials (Hamilton 1994). For example, the 120,000 hectare Taman Baru forest reserve in Riau Sumatra has lost around 25,000 hectares, or twenty percent of its forest cover, to illegal logging. SKEPHI has documented various cases of timber theft from reserves across Indonesia (SKEPHI 1993).

Anecdotal evidence suggests that companies involved in pulp and paper production have a poor environmental record. WALHI claims that some companies use pollution mitigation systems irregularly as they are expensive to operate and enforcement is weak (WALHI 1992). Poor monitoring, lack of specialists and an absence of political will means that companies can act with impunity within a system of formal requirements.

The expansion of the pulp and paper industry will have serious environmental consequences within Indonesia and across the globe. Increasing deforestation, loss of biodiversity, the introduction of organochlorins into a relatively pristine environment and dispossession of traditional landowners are all likely outcomes. The prevailing power structure and industry overexpansion means that economic gains will not be maximised and those that are realised will be captured by the wealthy elite.

This case study of the expansion of the pulp and paper industry in Indonesia sheds light on many aspects of the relationship between trade and the environment explored in previous chapters. It clearly illustrates the influential role of globalising trade patterns on environmental systems and national political processes. For example, ever increasing demand for forest products such as paper in wealthy nations and decreasing trade barriers which allow greater access to markets, can only increase the pressure on the remaining natural forests of Indonesia, with significant environmental and political implications.

International Monetary Fund and World Bank structural adjustment policies which encourage the development of export orientated industries such as the pulp and paper industry in Indonesia often do so at the expense of tropical forests. Corruption and skewed internal political processes means many of the advantages accruing from such industries are appropriated by the elite while others whose way of life is affected gain few of the benefits and suffer most of the costs. The Indonesian government claims that forest production leads to the development of backward regions, and trickle down

employment benefits all local communities (Barber 1998). However studies on the economic impact of the timber industry in East Kalimantan suggest that such benefits are minimal with the few jobs created coming at the expense of locally based cottage industries (Barber 1998).

While the supporters of increasing international trade, in line with the ideals of comparative advantage and specialisation, promote its environmental benefits, they must also recognise its problems. Markets continuing to ignore the internal conditions under which exportable products are produced and the behaviour of firms involved may lead to a repeat of the Indonesian experience in the remaining forests of the world. Subsequent chapters of the thesis integrate evidence from the case study with the issues raised by both the neoclassical and political ecology frameworks.

-6-

Free Trade and the Environmental Assumptions of its Proponents

6.1 Introduction

This chapter examines the assumptions made by mainstream sustainable development regarding the environmental benefits to be gained by freeing trade. Many of these assumptions are grounded in classical and neoclassical trade theory which argues that countries should specialise in the production of goods in which they are the most efficient and trade to gain other needed goods. This is considered a movement toward sustainability as it enables each country to maximise output for a given input of resources.

Sustainable development argues that economic growth will be enhanced for all countries under a free trade system regulated by the WTO and that this will free resources for environmental measures. Such a position reflects the belief within modernisation theory that

the patterns which created wealth in Westernised nations can be replicated elsewhere and will eventually lead to economic diversification and be environmentally beneficial. This position is critiqued by examining World Systems Theory which developed in opposition to modernisation theory, the extent to which global economic growth has affected global poverty and whether or not economic growth has led to economic diversification. The final two sections of the chapter examine issues regarding pricing regimes and the importation of environmentally advanced technology which are considered major environmental advantages by proponents of free trade and sustainable development. Problems of cost internalisation and the importation of environmentally inappropriate technology are examined before conclusions are drawn.

6.2 Classical Trade Theory

Classical trade theory originated as an antidote to the prevailing mercantilist position adopted by nations in the eighteenth century. Mercantilist countries endeavoured to achieve national security through creating a positive balance of trade between themselves and their colonies or other nation states (Merret 1997). Mercantilist countries 'focused on the export of high value added manufactured goods in order to increase the flow of gold into the royal treasury' (Merret 1997 p.106). Policies ensuring national self interest and a positive balance of trade were implemented through colonialism, unequal exchange between centre and periphery, monopolistic trade and war (Merret 1997).

The industrial revolution greatly increased industrial capacity and output this spurred the search for more markets and increased the need for stability in the global trading system.

According to Merret (1997) the question for British political economists therefore became 'how to replace the excesses of mercantilism with a world economy based on stable trade while maintaining world economic and political dominance' (p.106).

Adam Smith's the *Wealth of Nations* (1776) represented the beginning of the era of classical trade theory by illustrating how international trade could be beneficial to all participants. Smith (1776) argued that countries should concentrate on economic specialisation to produce gains in productive efficiency and national income in the search for economic growth which was regarded as the key to national wealth and power. Domestic welfare and economic growth was considered to be reduced when countries erected protectionist barriers against the exchange of goods (Smith 1776). According to Smith countries should focus on creating products which utilise their resource endowments most efficiently and then engage in free trade with other countries in the world economy. A lack of international trade would mean that the gains from specialisation could not be realised. The trade theory of Smith is 'based on the merits of a territorial division of labour and maximisation of absolute advantages in production' (Merret 1997 p.106)

A country has an absolute advantage in a particular product if it can produce it more cheaply than other countries and the wealth of two trading partners will be maximised if each country specialises in the production of goods in which it has the greatest efficiency (Merrett 1997). In the *Principles of Political Economy and Taxation* (1817), David Ricardo extended the trade theory of Adam Smith to show how free trade could be mutually beneficial to all trading partners even if they enjoy no absolute advantage in the production of any

commodity. Ricardo's law of comparative advantage argues that the flow of goods between countries is determined by the relative, not absolute costs of goods produced. Thus a country has a comparative advantage in a particular product if it can produce it more cheaply relative to other products than other countries can. A country can have a comparative advantage in a good or service without having an absolute advantage. Under Ricardo's model countries should specialise in the production of goods in which they are the most efficient, or those in which they hold the greatest comparative advantage.

Ricardo illustrated his theory of comparative advantage with a series of two country, two product labour cost models such as the example of the cost of production of wine and cloth in England and Portugal which is reproduced in Appendix 2. This has become a standard example when considering trade between nations in agricultural and manufactured commodities. In its simplest formulation the model shows that a nation with good soils and a favourable climate will have a comparative advantage in agriculture over nations with poor soils and poor climate. Even if this nation is more productive in both agricultural and manufacturing production it will gain most by specialising in agriculture where its productivity advantage is greatest. Its comparative advantage is maximised by exporting agricultural products and importing manufactures, allowing it to convert agricultural output into manufactured goods on a more favourable basis than in a state of autarky.

Ricardo argued that 'even though a country may have an absolute advantage in the production of every commodity it should still specialise in the production of goods in which it has the greatest comparative advantage and leave the production of other commodities to

other countries. The creation of an international division of labor enables all countries to gain more from exchange' (Merret 1997 p.106). The larger the market as measured by the number of trading partners, the greater the division of labour and hence economic growth for all parties concerned. The concept of comparative advantage and the accepted benefits of specialisation forms the central core of twentieth century neoclassical trade theory.

6.3 Neoclassical Trade Theory

The simplest formulation of neoclassical trade theory argues that each country's comparative advantage is based on differential endowments of the factors of production. Every country has a unique mix of capital, land, labour, management and technology that determines the specialised products which can be produced and traded. Proponents of the model argue that more developed countries (MDCs) produce everything more efficiently as they have a comparative advantage in capital and technology. Less developed countries (LDCs) have an abundance of low cost labour. Therefore they conclude MDCs should produce and exchange capital intensive commodities such as manufactured goods while LDCs should specialise in the production and trade of labour intensive commodities.

Neoclassical trade theory considers free trade better from a global economic standpoint as it maximises world output and represents the optimal division of labour. The systems ability to maximise and benefit from the division of labour depends on an absolutely liberal system of international trade. Only if the possibility of intervention by any country is excluded can the full benefits of trade be realised (Pertot 1972). Thus the dismantling of barriers to free trade has been seen as central to the successful operation of the global economy.

Free trade increases the magnitude of the market served by specialised producers and allows possible economies of scale to be realised. Economies of scale exist when an x percent increase in output requires a less than x percent increase in input, leading to a decrease in individual unit costs. Opening domestic markets to imports also increases competition for domestic firms. This reduces the market power of domestic firms and encourages them to eliminate technical inefficiencies.

Free trade advocates argue that the greater competition involved in free trade will drive technological innovation and if nations trade with one another, technological innovations in one country will be more easily transferred elsewhere. In a deregulated international trading system growth in individual nations is considered mutually reinforcing. For example, if Country A grows and trades with Country B this increases the demands for B's exports, increasing growth in B. This in turn, increases the demand for A's exports, stimulating growth there. A specific version of this relates to trade between rich and poor nations. The trickle down hypothesis is that growth in rich countries is good for poor countries because it expands the markets for their exports, so that greater affluence in the rich nations trickles down to the poor.

Neoclassical trade theory is built upon the notion that states act to maximise their economic wealth. Therefore it is concluded that maximum global welfare and efficiency are achieved under free trade with countries specialising in the production of those goods for which they have an absolute or comparative advantage. While particular countries may better their

situations through protectionism, such policies are regarded as unacceptable and only as a short-term solution. Neoclassical trade theory recognises that trade regulations can be used to correct domestic distortions and to promote infant industries, however it argues these situations are rare and should be considered temporary departures from the policy goal of free trade.

6.4 Capital Mobility and Comparative Advantage

Theories of comparative advantage assume that the factors of production, especially capital, are not internationally mobile; that is, no country invests beyond its own borders (Daly 1993). The later part of the twentieth century has seen the detachment of capital from territorial space. In the hundred years up until 1960, moneys, bank assets and securities had a clear national identity and circulated mainly within the territorial jurisdiction of the state where they originated (Scholte 1997). Recently there has been dramatic growth in the area of electronic banking which further distances money from territorial space by shifting into the arena of borderless cyberspace. The growth of electronic flows of capital means a national currency can circulate as easily outside as inside its country of origin. In the late 1980s almost as many US dollars were held outside as inside the United States (Scholte 1997). Much contemporary finance consists of transborder activities, transactions that cannot be easily fixed in specific countries. In 1995 over '9 trillion US dollars of the world's bank assets belonged to depositors not resident in the country where the account was held and/or were denominated in a currency issued outside that country...Since the 1970s it has become common for a loan to be issued in one country, denominated in the currency of a second

country, for a borrower in a third country, by a global bank or syndicate of banks with head offices in fourth and more countries' (Scholte 1997 p.439).

Companies are increasingly issuing and trading their stock on exchanges in each of the world's major financial time zones. Market transactions now occur via telephone and computer and in this situation the dealer can be located anywhere in the world (Scholte 1997). Increasingly then, financial activity is difficult to pin down to a particular country and is 'conducted in the world as a single place' (Scholte 1997 p.440). Companies are also increasingly international in their focus. In 1960, 3,500 were classified as enterprises operating in more than one country. This grew to 40,000 in 1995 (United Nations Council on Trade and Development 1996). Enterprises have pushed the development of global communication, global organisation and global finance in order to be able to site production operations wherever resource availability, labour costs, taxation rates, regulatory frameworks and other variables are most favourable to them. Through global sourcing a company can draw the materials, components, equipment and services it needs from anywhere in the world. Some companies have exploited the possibilities of globalisation to spread the various stages of a single production process across several countries.

The mobility of capital and the means of production undermines Ricardo's assumption that they are essentially immobile. Thus Daly (1993) maintains that adherents to the free trade paradigm are using an 'argument that hinges on the impermeability of national boundaries to capital, to support a policy aimed at making those same boundaries increasingly permeable to both capital and goods. That fact alone invalidates the assumption that international trade

will inevitably benefit all its participants' (p.25). The existence of capital mobility means comparative advantage becomes immaterial because capital will drift to nations with an absolute advantage (Daly and Cobb 1990). Countries not possessing a clear comparative advantage will experience pressure on wages, conditions and environmental regulations if they are thought to affect international competitiveness (Costanza *et al* 1995). The ability of capital to move from high wage regions to low wage regions can potentially drive down living standards for all workers.

Whilst conceptions of comparative advantage presuppose the existence of economically meaningful national boundaries, capital is free to move from one country to another, taking jobs and wealth with it. In 1997 the Organisation for Economic Cooperation and Development (OECD) hosted a series of meetings which attempted to negotiate a Multilateral Agreement on Investment (MAI) designed to further liberalise investment. Two principles form the basis of the MAI negotiations: non-discrimination and assured protection for investors and their investments. Non-discrimination, or what is called "national treatment", means that governments treat foreign and domestic investors the same way. For example, if a government imposes a requirement on investors, this requirement should not be more stringent on foreign investors than on domestic investors. Investment protection provides investors with the assurance that their investment interest will be protected within a set of clear rules. For example, investors should have equitable access to prompt compensation in cases of expropriation (OECD 1997). Successful conclusion of negotiations on the MAI would have outlawed all restrictions and controls that national governments might wish to impose on foreign investment and was regarded as an important

step towards a fully integrated global marketplace. The MAI was defeated after concerted protests by a variety of action groups across the globe. However many of the proposals put forward in the agreement have resurfaced in negotiations regarding the proposed agenda for the next round of trade liberalisation talks held under the auspices of the World Trade Organisation.

Increasing capital mobility poses a set of economic, social and environmental problems for the nation state as countries are forced to compete with one another to attract the capital necessary for growth. Globalisation has made it easier for firms to shift production overseas and use foreign workers instead of local ones. The result has been job insecurity, the erosion of non wage benefits and the weakening of trade unions (Rodrik 1997). Government policies shape wages and conditions, taxation levels, environmental standards and a host of other factors that impact on investment outcomes. Through policy alterations governments can reduce industry costs and attract capital investment (Leveson-Gower 1997). Many developing and developed countries grant tax concessions and exempt companies from certain regulations to achieve a favourable investment regime. The effect of international competition within nations is often used to induce workers to be more mobile and accept lower wages. Therefore, it is argued that deregulated international commerce effectively results in competition between countries when setting their social and environmental standards (Leveson-Gower 1997).

Considerations of international competitiveness can deter countries from adopting stricter environmental legislation. Australia's reluctance to impose greenhouse gas emission ceilings

because of its possible effect on the coal industry's international competitiveness is a prime example. Most research to date has focused on whether capital moves to countries with lower environmental standards, rather than the effect of competition on environmental policy implementation within states. Research has found that environmental costs only make up one to two percent of overall costs (Leveson-Gower 1997). As such it is not considered an important component of country competitiveness and capital investment choices (Leveson-Gower 1997). Many commentators use this fact to argue that concerns about the effect of international trade on environmental standards are not justified (Leveson-Gower 1997).

There are a number of reasons why this conclusion should be treated with scepticism. There are examples of industries in particular sectors moving as a result of higher environmental standards. Heerings (1993 quoted in Leveson-Gower 1997) details the movement of the pesticide industry from Europe to developing countries as a result of the introduction of high environmental standards. Companies seldom undertake wholesale movements to other countries, rather they merge, outsource, takeover or enter into joint ventures in order to expand internationally and gain access to abundant natural resources and cheap labour. Until the late 1980s Indonesia was a relatively minor participant in the international pulp and paper trade. However a combination of factors such as a decrease in economically and politically available forest in the Northern Hemisphere, large amounts of cheap timber and favourable government inducements led to the development of a major industry. Typically, large pulp and paper projects in Indonesia have been joint ventures between established Northern firms and local companies with strong ties to the Suharto family or the military,

production output is focused on export markets and there is minimal consideration of environmental impact. From a global ecological standpoint there is nothing to be gained if higher environmental standards in one country leads to industries shifting production or sourcing raw material inputs from other areas.

Furthermore, the current low level of environmental costs involved in industry production may reflect no more than the inadequacy of current environmental standards (Leveson-Gower 1997). The imposition of higher standards in developed countries may see further industry relocation. Trade proponents argue that environmental costs can be offset by the positive economic effects of environmentally driven technological innovation, such as increased efficiency, reduced inputs and recycling of outputs. Environmental technologies that improve profitability are attractive to policy makers as they indicate a situation in which producers suffer no economic detriment in achieving higher environmental quality. The gains made by Germany and Japan are examples of countries that have succeeded in this area. However such innovations can only be relied upon to deliver improvements in certain industries in some countries. In terms of forestry it is always going to be more economically viable in the short term to clear-cut forests rather than pursue sustainable logging, and this is to the detriment of biodiversity and forest regeneration.

Even if efficiency gains exist in forest industries the net environmental benefit can be outstripped by the increases in production that international trade stimulates. For example, a study examining the effect of the removal of barriers to free trade in the Philippines on deforestation found that trade liberalisation would expand timber harvesting by 6.5 percent,

wood based exports by 28.5 percent, wood industry investment by 3 percent and forest industry employment by 13 percent (Boyd, Hyde and Krutilla 1991). Forest cover in the Philippines has decreased at an alarming rate in the past 30 years. According to the FAO forest cover has decreased from 57 percent of total land area in 1965 to less than 22.5 percent in 1995 (FAO 1997). Remaining forests have suffered a serious decline in quality and any increase in harvesting could be disastrous unless accompanied by stringent guidelines.

Similarly, a study commissioned by the International Tropical Timber Organisation (ITTO) examined the implications of a ten percent across the board cut in transfer prices as a proxy for the removal of both tariff and non tariff barriers to tropical timber products. The report simulates the complete removal of log export bans in Malaysia, Indonesia, Papua New Guinea, the Philippines and West Africa. The study indicated that trade liberalisation is likely to produce significant economic gains for importing countries, particularly those with log processing capacity, while the impacts on exporting countries are likely to be mixed. In the simulation provided by the study, the rise in producer log prices could provide an important incentive for sustainable timber management however, the scenario assumes that effective policies promoting sustainable harvesting levels are in place in all producer countries by 2005. Without such policies the higher prices stimulated by trade liberalisation could lead to increased felling of remaining commercial timber reserves (Centre for International Trade in Forest Products 1991).

6.5 Global Environmental Bargains

Recently the growing mobility of international capital has promoted global environmental bargains that redistribute the net costs of industrial production. An agreement between the American based New England Electric System (NEES) and the Malaysian based Innoprise Corporation illustrates this point. In 1992, NEES was facing a Massachusetts legislative proposal for a carbon tax of $22US per ton on emissions in the state. The proposal was based on the zero sum logic of global greenhouse: it did not matter where the carbon was absorbed globally. Rather than reduce emissions in Massachusetts by scrubbing carbon dioxide, at a cost of $60US per ton, NEES decided to invest in a reduced impact logging project in the Malaysian state of Sabah (DeVoss 1995). NEES invested $700,000US to allow Innoprise to purchase sophisticated logging equipment so as to introduce new harvesting practices on 1,400 hectares of virgin rainforest and to monitor the effects of the program.

Under the NEES-Innoprise agreement, the same volume of timber is harvested as in conventional methods, but environmental damage is minimised. Road skid trails and loading points are designated in advance on topographical maps, all trees intended for harvest are marked for directional felling towards the nearest skid trails and large branches and vines entwined in trees are cut so that falling trees do not drag down their neighbours. After the timber is cut the area is sown with a cover crop to prevent erosion. On the basis of this method's superiority in forest management over conventional methods that may have been used, the company claims to have removed 550,000 tons of carbon dioxide from the atmosphere, at a cost of just above one US dollar per ton. The success of the venture has led 50 other American power companies to search for similar joint ventures with timber

companies (DeVoss 1995). The net result of such programs is increased investment in logging in virgin rainforest. While some gains may be made through improved practices, the increase in production prompted by investment could have a net negative effect. The global trading logic of the scheme becomes apparent when presented in its most simple formulation: air pollution in Massachusetts can be addressed by investing in a commercial logging venture in virgin tropical rainforests in Malaysia. While the hypothesised result may be a stabilisation of global greenhouse levels the reality is that companies in Malaysia receive extra investment to continue logging while communities in Massachusetts suffer the effects of localised pollution. Significant economic gains for corporations through such trade are easy to identify but those for the environment far harder to specify.

6.6 Pollution and Comparative Advantage

International trade economists such have contended that countries have variations in the capacity to absorb or assimilate pollution and that like the amount of sunlight, the quality of labour, and the fertility of the local soil, these differences are a legitimate component of comparative advantage:

> the levels of air or water pollution differ from country to country. There could, consequently, be wide differences in their assimilative capacities. In many developing countries, for instance, pollution levels are relatively low; therefore, they may not need standards relating to the emission of noxious gases, considered necessary in the environmental setting of the developed countries (Rege 1994 p.112).

The concept of absorptive and assimilative capacity is considered to have little scientific validity, because 'ecosystems do not assimilate industrial pollution; they just dilute it' (Buckley 1993 p.121). Moreover, the argument that these differences should be used for national or regional competitive economic advancement infers that these nations should become as polluted as industrial areas (Buckley 1993). 'Even if that were socially desirable, it would not work: people can continue to live in heavily polluted areas only because these are surrounded by less polluted areas which act as pollution sinks' (Buckley 1993 p.122).

Inherent within this extension of comparative advantage is the belief that social preferences and priorities differ between countries with low and high income: 'the stage of economic development and the nature of the available technological infrastructure may lead to countries showing different preferences regarding environmental quality, resulting in differences in pollution and other process standards, which their industries are required to meet' (Rege 1994 p.112). It is therefore assumed that individuals within such countries are less concerned about environmental quality. Research shows this is not the case; the priority attached to environmental issues is as high or higher in developing countries as it is in developed ones (Dunlap *et al* 1992 quoted in Buckley 1993). The lack of institutional frameworks militates against the conversion of public opinion into government action in many developing nations and as such social preferences are rarely expressed through fully representative processes (Buckley 1993). Additionally, the ability of institutions in developing countries which traditionally have poor scientific infrastructure to reach informed decisions

over the importation of such industries, particularly when they are promoted by transnational corporations with large scientific departments, is questionable.

It is a small step from arguing that pollution assimilative capacities may be a source of comparative advantage, to arguing that pollution intensive industries should be encouraged to move to poorer nations as a means of economic development:

> the paucity of resources may induce governments, particularly those of developing countries, not to require their industries to adopt the higher pollution or emission standards that are imposed on industries in the developed countries. In choosing between economic development and alleviation of poverty on the one hand and environmental quality on the other, they may decide to apply the greater portion of the limited available resources to development and economic growth and prefer to clean up later, given the existing relatively low level of pollution in their countries (Rege 1994 p.112).

This position fails to recognise that ecological damage is in most cases irreversible. Cleaning up later is not an option when bio-diversity has been lost because of habitat destruction. For example, commercial logging in Southeast Asia has resulted in widespread deforestation. The forests of the area are considered to be some of the most biologically diverse in the world and the loss of this habitat disproportionately threatens a high percentage of global plant and

animal life. Complete reversal of this damage is impossible, therefore efforts need to focus on preserving global biological resources before they are irreparably damaged.

Environmental pollution causes considerable health costs. Widely publicised episodes such as mercury poisoning from a manufacturing firm, which resulted in severe neurological afflictions in Minamata, Japan, in the 1950s, and the Bhopal tragedy in India in the 1980s, show the danger of the 'grow first, clean up later' approach. Other evidence such as steady health deterioration in children and adults from air pollution is steadily emerging. The benefits, which eventually accrue to society from having environmental safeguards in place, far outweigh the initial costs of pollution control. Pollution can cause widespread economic disruption. Pollution of the Cijung river associated with the establishment of the Indah Kiat pulp mill in Indonesia destroyed the livelihoods of fish farmers downstream and severely disrupted the lives of thousands of villagers dependent on the river for drinking water. Driven by the need to create cash flow the mill began operation before waste water treatment plants were operational.

In a memo leaked to the press, World Bank Chief Economist, Lawrence Summers, argued that the Bank should be encouraging the migration of dirty industries to less developed countries as the measurement of the costs of health-impairing pollution depends on the foregone earnings from increased morbidity and mortality. From this point of view a given amount of health-impairing pollution should be incurred within the country with the lowest cost, which will be the country with the lowest wages. According to Summers the concern and associated costs over an agent that causes a one in a million change in the odds of

prostate cancer is going to be much higher in a country where people survive to get prostate cancer than in a country where under five mortality is 200 per thousand (*The Economist*, 8 February 1992, p.62). While the economic logic of this position may be compelling and an accurate description of current global politics it is not a tenable basis for policy as environmental damage in low income nations still ultimately impacts on wealthy nations in the longer term (Buckley 1992). Moreover, it raises crucial ethical and political issues regarding the valuation of human life.

6.7 Economic Growth and Environmental Quality

Sustainable development regards lack of development as evidenced through poverty and underdeveloped markets to be at the heart of environmental degradation. Therefore it follows that the best way to tackle environmental problems is to encourage development. Free trade is presented as the natural way to foster development as it will reduce market distortions and create the wealth necessary to end unsustainable patterns of production and resource use. The expansion of trade since the Second World War is generally considered responsible for the growth in income among the developed and newly industrialising nations. Rising income levels are generally associated with a reduction in poverty and environmental degradation and increasing concern for quality of life issues and environmental protection. Higher national income provides the resources necessary to invest in cleaning up pollution, preserving resources and installing less environmentally unfriendly technology. For example, in terms of deforestation, rising income levels would allow the luxury of establishing reserves of non-productive forest for conservation purposes.

6.8 Modernisation Theory

Sustainable development assumes that patterns of economic development that led to the wealth of Westernised nations can be repeated elsewhere in the world and points to evidence from newly industrialising nations that this is possible. This position draws heavily on modernisation theories of development. Modernisation theorists such as Rostow present a theory of social change that argues that economic aid, normally in the form of loans or foreign investment, allows countries to progress from being underdeveloped to a developed state and hence participate in the global economy on a more equal footing with corresponding environmental benefits.

Advocates of modernisation theory ground their position in the virtues and promises of national modernity achieved through industrialisation and an international system of free trade. A central tenet in the model is the belief in the social and economic benefits of a capitalist system where resources are privately owned and allocated through the operation of a market free from distortions. Clements (1980) suggests that the political popularity of modernisation theories reflects the fact that their central assumptions leave the current world economic system intact, do not demand any radical restructuring of domestic economies, can be incorporated into most conservative policies and seem to have worked in some countries. Many of the same arguments can be used to explain the political popularity of sustainable development.

For modernisation theory the nation state is the primary unit of analysis. Implicit within this position is an assumption that nation states can develop themselves by their own efforts and

that all states progress from being underdeveloped or backward to becoming developed or progressive. The most influential expression of the stage theory of development was presented by W.W Rostow, a scholar at the Massachusetts Institute of Technology and later Director of Policy and Planning at the United States State Department during the Kennedy administration. Rostow (1960) proposed that all societies pass through five stages of development. The first stage, *the traditional society*, is characterised by being mainly agricultural and with low productivity. Lack of technology limits growth and power is in the hands of the landowners.

With the second stage, *preconditions for takeoff*, the process of transition begins. England was the first country which developed these preconditions, followed by Western Europe. But in most countries this stage was externally induced by advanced countries which accelerated the destruction of traditional societies. Many economic changes are introduced, such as the expansion of trade, increases in the rate of investment and the setting up of financial institutions, but the decisive element is the constitution of a national state. The *take off* is the point where growth becomes a permanent feature of society. Investment at a level which regularly, substantially, and perceptibly outstrips population growth is the economic mechanism which promotes the process of transition.

The fourth stage, *the road to maturity*, is a period where every aspect of the economy is modernised and makes use of new technology and exports expand. The first industries which promoted the take-off are now replaced by more sophisticated ones, and an important process of industrial diversification takes place. Finally the stage of *high mass consumption* is

characterised by an orientation of the economy to consumer durables and services. Per capita incomes have increased so much that consumption expands beyond basic needs. Welfare, social security and environmental programs become important goals which compete for resources. Military expenditure also increases, reflecting a new search for power and influence in the international arena (Rostow 1960).

Rostow's thinking has had a profound influence on the aid and development policies of the major industrialised nations and the United Nations (Clements 1980). Peluso *et al* (1995) in a review of scholarly literature regarding forestry in Southeast Asia identify an ongoing writing tradition amongst development and forest economists working for or with the Food and Agriculture Organisation of the United Nations, the World Bank, or bilateral aid agencies such as the U.N Economic Commission. Such authors were:

> 'interested in forests as a source of "fuel" for economic growth and development. Major themes of this literature included specifying maximum rates of timber exploitation, the creation of plantations or industrial forests and the potential for the development of value-adding industries such as paper. Following Rostow's work these writers realised that poor countries would have difficulty obtaining initial investment capital and argued that it could be generated from a society's land and natural resources, where quick productivity increases at low costs were possible. Thus forestry was treated by authors such as Furnival (1956) as a source of state revenue with the claims of local inhabitants being ignored or treated as threat to state revenue.

> Forested lands were also examined for the contribution they could make to economic growth in other sectors such as agriculture and hydroelectricity' (Peluso *et al* 1995 p.199).

Rostow elaborated concern with the causes of national and international market equilibrium, international specialisation in terms of comparative advantage, and the effective market allocation of resources. This reflects the modernisation model's close association with neoclassical economics. Neoclassicism is based on the assumption that individuals, firms and countries are economically rational and will always choose to maximise profits and minimise costs. The quest for profit is regarded as the driving force behind economic and social development. The consumer is considered sovereign and will decide what the system produces and in what quantities. Producers compete with one another to satisfy consumer demand in the most profitable way. Prices at the national and international level are determined by the forces of supply and demand. The key belief of the modernist view of development is that economic and social progress is gained through the pursuit of enlightened self interest in national and international markets.

Modernisation theorists argue that there should be as little state intervention in the market as possible. State intervention should be reserved for those crises caused by the market's inability to promote social or individual welfare and to remove price distortions. Todaro (1977) argues that if market prices are to effect economic activities in the appropriate direction they must be manipulated to remove factor price distortions by means of subsidies and taxes to ensure that prices reflect the full costs of resources being used. Distortions arise

in circumstances where prices paid for resources do not reflect their true value because of institutional arrangements which interfere with the free workings of supply and demand (Todaro 1977). Moreover it is assumed that as accumulation and growth occur all living standards in the population will rise automatically as the benefits of growth trickle down. Free international trade is advocated in line with comparative advantage. Thus they are in favour of dismantling tariff and protective barriers in order that each nation produces those commodities in which it has a natural advantage and export led growth is seen as a major means of development for poorer countries.

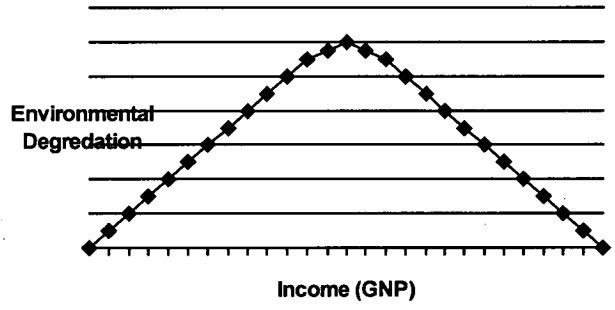
Thus it is possible to witness the similarities between modernisation and neoclassical economic theories and sustainable development. All place heavy emphasis on the need to free trade and investment and end subsidies if national goals are to be met. Programs implemented under the mainstream sustainable development paradigm recognise the need for economic modernisation as a precondition if environmental issues are to be tackled.

6.9 The Environmental Benefits of Growth

The main evidence supporting this point of view and used to counter arguments that economic growth will always lead to a deterioration in environmental quality, and against those wishing to impose environmental standards on developing countries, is found in studies examining the relationship between income and environmental quality. Grossman and Kruger (1991) found that sulphur dioxide concentrations first rise with income and then at around $5,000 p.a average income they fall.

Studies such as this that show a link between environmental quality and income have been labelled environmental Kuznets curves (Pearce 1995). Economist Simon Kuznets investigated the relationship between economic development and the distribution of income. He showed that as economies develop, inequality gets worse but then better. Studies that show a similar relationship between environmental quality and income thus follow this precedent.

Figure 6.1 Environmental Kuznets Curves



The argument is that, as incomes grow, environmental degradation gets worse but then improves as preferences for environmental quality change and resources become available for pollution control.

Source: Pearce 1995 p.110

The persuasive nature of the environmental Kuznets curve argument and its importance in defending the deregulation, free trade position has led to the search for other environmental issues which exhibit similar behaviour. Cropper and Griffiths (1994) investigated the relationship between income and deforestation for sixty four countries over twenty nine years and concluded that Kuznets curves exist for Africa and Latin America. Shafik (1994) also found a Kuznets curve for deforestation but concluded that the evidence is statistically weak, with income per capita having virtually no explanatory role in deforestation. Shafik

found that investment was the best explanation of annual rates of deforestation and suggested that this was because investment places a higher burden on natural resources.

Overall the evidence provided by environmental Kuznets curves is unconvincing and built on questionable foundations. Environmental data on a cross sectional and time series basis is difficult to assemble and notoriously unreliable. Even if curves do exist it cannot be concluded that the best thing to do is to abandon the environment to the forces of the market so it eventually improves. Deforestation rates may slow, but the forest area and biodiversity will be irretrievably reduced. Much of the evidence in support of the environmental benefits of growth equates environmental quality with pollution reduction and not the existence of environmental goods such as biodiversity.

Curves for one environmental variable need not be the same for other variables. For example there is no Kuznets curve for carbon dioxide emissions, which tend to rise consistently with income. Japan's carbon dioxide emissions for 1995 were at record high levels. They totalled 332 million tonnes of carbon, 8.3 percent higher than in 1990 (Hadfield 1997). Additionally, increasing income is associated with increased resource consumption. If an income turning point for environmental damage exists it is substantially above the income levels likely to be achieved by most countries in the foreseeable future (Brack 1995). Pollution which impacts most heavily at the local level, such as sulphur dioxide is more likely to be addressed than pollution that impacts at the global level, such as carbon dioxide. Finally there is never a natural link between economic growth and pollution control; effective public policies are required (Ekins 1995).

6.10 Global Economic Growth and Poverty

Historical evidence linking global economic growth and poverty reduction that could free income for environmental purposes is not convincing. The global economy has nearly quintupled in size over the past 40 years. The richest one-fifth of humankind has doubled its per capita consumption of energy, meat, timber, steel and copper and quadrupled its car ownership. At the same time consumption per capita of the poorest one-fifth has grown nominally (Durning 1996). In terms of global income the poorest one-fifth of people have a cash income of less than one US dollar per day and the next one fifth average only three US dollars per day. According to Myers (1997) 40 percent of people account for only 6.5 percent of the world's income. The 1996 World Development Report published by the World Bank detailed that the divide between rich and poor is growing and is twice what it was 30 years ago (World Bank 1996). As the case study shows, paper consumption is also a good indicator of disparities in wealth and while pulp and paper production has soared in the third world consumption has not.

Evidence contained in table 6.1 confirms these points by showing that between 1965 and 1990 the share of world income enjoyed by the richest twenty percent of the world's population has increased while the percentage share for the rest of the population has decreased.

Table 6.1 Shares of the World Income 1965-1990

Population	Percent of Total World Income			
	1965	1970	1980	1990
Poorest 20%	2.3	2.2	1.7	1.4
Second 20%	2.9	2.8	2.2	1.8
Third 20%	4.2	3.9	3.5	2.1
Fourth 20%	21.2	21.3	18.3	11.3
Richest 20%	69.5	70.0	75.4	83.4

Source: Magdoff (1998) p.12.

Nations reliant on the export of non-fuel primary products have suffered a marked decline in their terms of trade during the 1980s, with the price index of their exports falling 50 percent in real terms (Medley 1992). Comparative advantage is reliant on production costs which are a supply factor. Prices however are established by the interaction of both supply and demand factors such as the extent of competition within the market and are subject to change over time. If, for instance, several countries specialise in a certain product because they believe they have a comparative advantage in it, and the expanded production significantly lowers prices, as in the tropical timber market, the benefits of specialisation will be greatly reduced. In extreme cases the prices may even fall below production costs making specialisation an economic, social and environmental disaster.

6.11 World Systems Theory

Countries with developed economies impact greatly on the environmental politics of export based nations through trade. Modernisation theory suggests that the exploitation of resources for export within these exporting countries should result in development and a diversification of the economy toward a sustainable footing as institutional and market capacity increases. However the case study does not support this conclusion. Export of

tropical timbers from Southeast Asia has not abated as other industries have grown. Moreover the wealth generated by the trade has not been equally distributed and the burden of unsustainable resource extraction has been borne by poorer countries and particularly the poor within these countries. This situation indicates that the wealth and success of richer nations has been achieved to some degree at the expense of the ecosystems of poorer nations, a conclusion that can be illustrated with reference to *world systems theory*, a framework for understanding the development of the capitalist system and its component parts (Wallerstein 1974). World systems theory exposes the historical and current basis of unequal power relationships that confront countries engaged in trade. As such it is useful in explaining the basis and existence of the environmental impact that developed nations can impose on others through trade.

World systems theory rests on the underlying assumption that all societies are part of a larger social system that shapes them and is in turn shaped by them according to the role they play in it (Straussfogel 1997). A defining characteristic of any world system is the logic behind its economic mode of production, and by the political and social structures that emerge to facilitate economic production and growth. While a variety of world systems are assumed to have existed at different times in history across the globe most attention has been given to the modern world system, the driving logic of which has been the accumulation of capital (Wallerstein 1992). In pursuit of this aim, the modern world system has become truly global and the global economy of today can be regarded as the contemporary manifestation of a capitalist world system that emerged in the fifteenth century in Europe (Straussfogel 1997).

World system theory rests on a historical view of development that stresses economic, political, and military events over the last 500 years (Chase-Dunn 1989). The affluence of wealthy nations in the contemporary world is the result of the long term exploitation of poor countries. These exploitative patterns enforce the poverty of poor countries and provide few opportunities for them to rise from the bottom of the world system (Bradshaw and Wallace 1996). The world system model divides the modern world into three categories: core, peripheral and semiperipheral nations which reflect rich, poor and middle income countries. The core is made up of industrialised wealthy nations such as the countries of Western Europe, the United States, Japan and Australia. The periphery is the poorest, weakest and least developed countries of the world, while the semi-peripheral countries are those that have achieved a level of industrialisation and overall development such as South Korea, Taiwan, and Singapore.

Core nations have historically sought the basic materials that exist in great quantity in noncore countries. Raw materials such as minerals and metals that are required to produce industrial products, automobiles, weapons and luxury items form the basis for wealth in the core countries. Raw materials also include the agricultural products which often grow well in the climates of the periphery, such as coffee, tea, sugar and cocoa. Core countries have adopted a variety of ways to gain access to raw materials. Historically European nations colonised nations in Asia, Latin America and Africa, forcing economic, political and cultural institutions of European origin upon them. Spain occupied much of Latin America in the fifteenth and sixteenth centuries. England, France and the Netherlands engaged in colonial expansion during the same period. During the seventeenth century these countries took over

many Caribbean islands and through the use of slave labour established sugar plantations on them (Bradshaw and Wallace 1996).

European powers exploited their colonies for minerals and metals, food and beverages, spices and fabrics which were transported back to Europe with little compensation to the colonies. European development therefore came partly at the expense of colonies which were left with fewer resources and greater underdevelopment. Eventually colonialism became an expensive proposition as the costs to maintain infrastructure and European law and order rose. After two World Wars many European countries were not capable of funding the costs of a colonial empire (Bradshaw and Wallace 1996). Moreover countries began to revolt against colonialism further increasing the costs. These factors led to the downfall of formal colonialism after World War 2 and over the next twenty years nearly every colonial country became independent from European powers.

World systems theorists argue that since the 1960s the original colonial period has been replaced by neocolonialism. Core countries still exploit noncore countries through the intermediary mechanism of the transnational corporation (TNC), huge corporate entities that are headquartered in core countries but do business in multiple nations, both rich and poor. World system theory maintains that TNCs exploit the raw materials and cheap labour in noncore countries. Powerful nations have provided a variety of means of economic, military and cultural support for TNC investments in poorer nations. Transnationals often produce goods in the poorer Southern nations or set up trade networks to gain access to resources (the favoured Japanese method) and export these goods back to the core where

they are sold for a substantial profit. The majority of the world's cobalt, chrome, platinum, iron ore and other metals, minerals and raw materials come from poor countries.

Noncore countries lack the ability to convert their raw materials into manufactured products. TNCs export raw materials back to the core countries and transform them into finished products, thereby increasing their wealth while poor countries are left with even fewer resources and less potential. The outcomes of the case study regarding the expansion of the pulp and paper industry in Indonesia conform to this theory. In terms of Japan, whose wood resources were severely exploited in the past, efforts are now made by its major corporations to maintain a constant supply from foreign sources. Japanese dependency on imported wood has risen from 5.5 percent in 1955 to 55 percent in 1970 and 66.5 percent in 1986 (Nectoux and Kuroda 1988). Japan has been the world major importer of tropical timber for nearly thirty years. The total volume of tropical wood imports into Japan amounted to 29 percent of the world trade in tropical hardwood products in 1986 (Nectoux and Kuroda 1988). In terms of paper products Japan has become the world's largest importer of forest products, second largest producer of paper and paperboard, third largest producer of pulp and second largest consumer of paper after the United States (Chew 1995). Over the past thirty years its total consumption of paper and paperboard has increased over 500 percent (Chew 1995). Chew (1995) argues that because of its proximity to Southeast Asia, 'Japan has treated the region as its own woodyard, just as England did with British North America in the eighteenth and nineteenth centuries' (p.204).

Activity of Japan's major corporations in the pulp and paper industry 'reflects the intensiveness and breadth of the capital accumulation process. Overall investment in the pulp and paper industry in Japan grew steadily from 1.8 billion yen in 1980 to 4.7 billion yen in 1989' (Chew 1995 p.204). This includes direct investments in other countries such as Indonesia. Moreover the concentration of ownership within the industry has also increased dramatically, with the major corporations accounting for an ever-increasing share of production (Chew 1995). The concentration of capital has conferred immense power to Japan's pulp and paper industry over its peripheral producers in the world system such as those in Southeast Asia (Chew 1995). Accusations of economic imperialism has been direct at Japan over the imposition of a 20 percent import tax on finished wood products and nothing on unprocessed logs, with the measure seen to be designed to protect Japan's labour intensive wood processing industries (Chew 1995). Efforts by producers to control supply have been met with price cutting to limit the possibility of a wood and forest products cartel emerging in the region (Chew 1995). Sections of the Japanese economy have grown rich through the unsustainable exploitation of forests in non-core countries, and elite groups within these countries have shared this wealth while the quality of life for many others in the periphery has been diminished.

Seen from the perspective of World Systems Theory the world trading system appears a harsher more competitive regime with outright losers as well as winners. Historically the wealth of the core nations has been created at the expense of the periphery. Some countries, through the exploitation of their natural resources, as in Indonesia and Thailand, may manage to achieve "development". However, as the currency crisis during the late 1990s in

Southeast Asia shows, wealth can transfer as quickly out of a region as it can be transferred into it under a free trade regime. Most poorer countries will continue to be affected by worsening terms of trade, high levels of debt service and a rapidly deteriorating environment. Growing inequality both within and between countries will increasingly mean that the poorest in both categories will experience more of the cost than the benefit of trade.

6.12 Economic Diversification

Related to the issue of economic growth and central to the belief in the environmental benefits of free trade is the argument that when trade liberalisation reduces barriers to manufacturers and services it can allow developing countries to diversify away from excessive reliance on exports of primary commodities (Brack 1995). Exploiting their comparative advantage in labour costs can end environmentally unsustainable practices of resource extraction. Repetto (1993) argues that the diversification of the Indonesian economy in recent years from timber and oil to textiles and electronics is an example of this trend. If this position is accepted, it would be expected that the diversification and expansion of industry that foreign investment and openness has encouraged would lead to a noticeable drop in the rate of deforestation. But the 1997 State of the World Forests Report issued by the United Nations Food and Agriculture Organisation details a continued high level of deforestation in Indonesia, suggesting that increased industrial diversification has made no difference to the rate (FAO 1997). Industrial expansion has fuelled growth in paper consumption. Exporting industries increase consumption of packaging cardboard and this is reflected in the massive expansion of the pulp and paper industry in Indonesia, which is to the detriment of forest cover. Rather than ending destructive patterns of resource extraction,

industry diversification has stimulated additional economic pressures to continue it. What emerges is a pattern of maximisation, where all economic advantages are exploited to achieve the goal of continued economic growth to the detriment of the natural environment.

Industrial development in poorer nations has done little to change patterns of comparative advantage in the world economy. According to Wallerstein (1991), when productive activities that were once high profit, high wage and high technology (such as paper, textiles, steel and electronics) lose their advantage they are shifted to peripheral zones of the world economy. Core zones are seeking to develop the leading industries of the next era; bio-technology, microprocessors and advanced forms of energy production to maintain their position in the global economic order (Wallerstein 1991).

Sustainable development emphasises striving for higher and higher growth rates in underdeveloped countries in the hope that benefits will diffuse to the poor and free income for environmental programs. However, as in the case studies presented, the benefits of economic growth often fail to reach the poor because the economic surplus is diverted to national and foreign elites. Disparities in wealth and power between nations are obvious. Exploitative working conditions and the expropriation of assets that yield tradeable goods, such as the forests in Southeast Asia from traditional land-holders, prevents weaker parties from sharing the benefits of trade. Gross inequalities between trading partners can allow the more powerful party to influence the terms of exchange. This breaches a fundamental assumption regarding international trade, namely that for all parties to benefit both production and exchange must be voluntary and fair.

6.13 Pricing Regimes

Proponents of free trade argue that open trading regimes tend to be associated with economically liberal policies and this includes less distortionary pricing policies. Natural resources under an economically liberal regime are less likely to be priced below cost (Brack 1995). Prices may not reflect the total environmental costs of production and consumption, but they are less likely to be subsidised. Often the poor environmental record of Communist Europe, where energy prices were held artificially low, is used as proof of the desirability of liberal pricing regimes (Brack 1995).

The removal of price distortions often associated with natural resources is believed to benefit both trade and the environment. This is one of the few areas of common ground between supporters of free trade and some environmentalists (Brack 1995). Efficient production reduces the drain on scarce resources such as raw materials and energy, and lowers the demands placed on the rejuvenative capacity of the environment. Allowing the most efficient producers to provide the world's goods and services is the main rationale for an open trading system. Efficient resource use requires that the price paid by producers for inputs and by consumers for final goods and services accurately reflects their total cost. In terms of tropical forestry, the imposition of such a regime would increase the value of wood products and provide an important incentive for sustainable production. While cost internalisation is an ecologically rational step it is not economically feasible for most countries in a competitive international trading system, unless all countries implement similar policies.

6.14 Internalising Trade Costs

Full cost internalisation remains a far off and perhaps unobtainable goal and as such the growth in economic activity which trade liberalisation causes is likely to result in increased pollution and the unsustainable consumption of natural resources. Cullen (1993 quoted in Brack 1995) found that if the costs of air and water pollution, accidents and other health effects caused by the mining, transportation and consumption of coal were incorporated, its price would increase from forty six US dollars per ton to more than two hundred US dollars per ton. The failure to incorporate the environmental costs into production and consumption prices is not specifically a problem of trade but rather with economic activity as a whole. Trade magnifies this effect and 'trade liberalisation will amplify the environmental impact of unsustainable patterns of economic activity' (Brack 1995 p.500).

The dramatic postwar increase in international trade means that more materials and goods are transported around the world with an associated increase in the use of energy and production of pollutants. The transport involved in international trade is estimated to account for one-eighth of the world's oil consumption (Lang and Hines 1993). Energy costs are subsidised by governments through investment, tax credits, subsidised research and military expenditures that ensure access to oil (Daly 1993). The environmental costs of oil are not factored into its price. In 1997, petrol in the United States was comparatively cheaper than at any stage in the last 60 years, cheaper than bottled water (Myers 1997). Costing of petrol to internalise its most obvious externality, air pollution, would increase the price by at least $2US per gallon. If the total costs of car culture, including noise pollution and other

non fuel externalities were covered, a price of $10US per gallon of petrol would be conservative (Myers 1997). To the extent that energy is subsidised then so to is trade. The full cost of energy stripped of its subsidies would reduce the gains from long distance trade, whether interregional or international (Daly 1993). The subsidisation of energy costs enables much obvious inefficiency to enter the global trading system. 'More than half of all international trade involves the simultaneous import and export of essentially the same goods' (Daly 1993 p.25).

The failure to incorporate environmental costs into the price of internationally traded goods indicates a situation in which prices do not reflect the full costs of production. Under such a situation a country's real comparative advantage may not be obvious and it may specialise in activities that actually lower its welfare. The long-term cost of producing certain goods such as paper may outweigh the economic gains.

6.15 Externalities

The tendency of market orientated systems not to recognise the environmental costs involved in production is traditionally explained with reference to the concept of externalities. In the discourse of market economics one of the distinguishing features of many environmental resources is that they are 'common property' goods. That is, they are regarded as goods which are commonly owned by society at large, such as the air. Being jointly owned such goods are available free of charge and hence people have an incentive to overuse and abuse these goods. Since the air is a free common good, electricity producers and consumers (for example) pollute the environment without incurring any direct, short-

term costs. The individual or company benefits from using electricity, whereas the costs of polluted air are borne by society at large. In the parlance of economics this is termed an 'external cost' since the benefits of using environmental resources accrue to the individual or company, while the costs of environmental damage resulting from the resource use are borne by other members of society, particularly future generations (Hamilton 1997).

6.16 Externalities and Environmental Economics

'It follows for environmental economists that the solution to environmental problems is to find ways of ensuring that the true value of environmental services are reflected in the prices paid by those who use them' (Hamilton 1997 p.40). Environmental economists have put a great deal of energy into valuing the environment. This has been attempted in two ways. Firstly, environmental economists have suggested that markets 'can be created for environmental services so that private decision-makers determine prices through supply and demand' (Hamilton 1997 p.40). According to their analysis common property goods such as the atmosphere are abused because they have no owner. Ownership of these goods would allow extraction of a payment for their use. 'Through the creation of property rights and a market, the costs of pollution would be internalised and firms would pollute less' (Hamilton 1997 p.41).

Secondly, 'the values of environmental services can be estimated by a range of valuation techniques so that public decision-makers can include them in their assessments' (Hamilton 1997 p.40). According to mainstream analysis the question of cost internalisation is at the heart of many trade and environment issues. In an ideal economic system the price of goods

would reflect the environmental costs involved in their production, varying with the different environmental impacts they cause depending on where and how they were produced.

6.17 Problems of Cost Internalisation

The difficulty in calculating the precise environmental costs of production and allocating them to a particular industry is immense, even at the national level. Moreover, cost internalisation is not useful in areas where the environmental losses in question are irreplaceable, as in the case of species extinction, since it is difficult for economics to price something for which there is no substitute. Neither is it good at reflecting costs to future generations, as there is no way of knowing what value they will attach to environmental resources.

Free trade regimes, it is believed, will be more likely to price goods to accurately reflect their full cost. But modern economies derive competitive advantage by failing to incorporate environmental externalities into economic pricing and decision making and are unlikely to give away these benefits without substantial resistance. The ability of one country to impose cost internalisation is limited as it would merely expose the fact that trade between countries with differing cost internalising regimes would be unfair (Daly 1993).

Conceptual problems arise when accounting or balance sheet language becomes the primary way in which environmental resources are analysed. Whether the resource is clean air, a deposit of bauxite or an area of forest, if it is seen as 'stock' the temptation to trade in it

unsustainably in times of economic crisis may overwhelm the desire to protect it for future generations. The granting of property rights and the creation of markets would mean that the preferences of wealthy individuals, corporations and nations would be more influential than those of the poor (Hamilton 1997). Descriptions of resources as 'stock' or 'environmental capital' imply trade as the necessary context in which to debate them.

6.18 Exporting Environmental Technology

The global expansion of industry and trade can result in the spread of new technology, which is in general likely to be more environmentally friendly (when "environmentally friendly" is narrowly defined in terms of pollution abatement) than the old. Countries with open trading regimes can benefit most from this technological transference. A World Bank study of the adoption of clean technology for wood pulp production found that openness is unambiguously environment saving, reducing pollution by ten to twenty percent over a period of ten years (Wheeler and Martin 1992). If, however, this same openness leads to massive expansion in the pulp industry, as in the case of Indonesia, the benefits of cleaner technology are lost. Between 1985 and 1995, Indonesian pulp production grew from 221,000 tonnes to 2,253,000 tonnes per year (FAO, 1997, FAOSTAT Database).

Open trading regimes are also able to benefit from the growing world market in environmental equipment and services estimated to be worth $600US billion (Brack 1995). By comparison the aerospace industry's annual market is about $180US billion dollars while chemical products are estimated at $500US billion. It is possible that adoption of strict

environmental regulations in one country may encourage a levelling up of standards in other countries as manufacturers seek to expand markets for technology which reduces pollution.

New environmental technology and industries are concentrated almost solely on what is termed the end of pipe sector, rather than the area of pollution prevention and process innovation which makes up less than one percent of the revenue of the environment industry (Karliner 1994). The OECD argues that creating an ecologically sound industry is economically uncertain as clean technologies which involve fundamental changes in processing expose companies to greater economic and market risk and have potentially greater impacts on competitiveness (OECD 1992).

6.19 Importing Environmentally Unsound Technology

Countries with open trading policies could also be more likely to have environmentally questionable goods, technology and production processes imported into them. Mitsubishi established a processing plant in Malaysia to make chemicals for colour television screens, a process which was judged to involve too much environmental risk to site in Japan (Karliner 1994). The expansion of industry in free trade zones on the Mexico/United States border reflects this trend. United States based transnationals such as General Motors, Union Carbide and Motorola have set up plants to take advantage of lower labour costs and less stringent labour and environmental laws (Karliner 1994).

The case of the exploitation of Guyana's Amazonian rainforest also shows how openness can lead to the importation of questionable business and production processes. Under

direction from the World Bank and International Monetary Fund, Guyana, since 1989, has embarked on a program of economic liberalisation and offered generous fiscal incentives to attract transnational capital. There has been a massive increase in aluminium, gold and tantalite mining, mainly funded by northern mining corporations. Asian timber companies have invested heavily, securing contracts to work forests. Faced with dwindling timber supplies in their home countries, but with abundant capital, well established markets, an experienced workforce and surplus machinery, logging companies acted quickly to secure the rights to more than 80 percent of Guyana's state forest (Colchester 1994).

Companies such as Malaysia's Rimbanum Hijau have been granted exemptions from income tax, corporation tax, property tax, most timber export taxes and most import duties (Colchester 1994). The expansion of Guyana's forestry industry is considered typical of third world timber industry development, a massive expansion of the industry with carefully targeted elite support, and development beyond the controlling capacity of the poorly staffed, funded and politically marginal forestry department (Colchester 1994). The unprecedented scale of foreign investment under economic liberalisation, particularly in the logging sector has had considerable influence on decision making.

The result of timber industry investment has been a shifting of the environmentally destructive political and economic styles of the Asian region into other areas (Colchester 1994). The interests of urban capitalists are increasingly overriding rural and environmental values (Colchester 1994). Forest exploitation has created a wealthy transnational elite, virtually unaccountable to anyone and unconcerned for the welfare of people affected by

their developments (Colchester 1994). This experience is not confined to Guyana. Transnational Asian logging companies are expanding into Surinam, Burma, Laos, Vietnam and Papua New Guinea with similar outcomes. This example shows how competitive advantages gained through environmentally unsound practices can be projected on to the global stage. Companies in the timber trade that pay the least attention to conserving the environment are the most profitable and as such have the capital required to expand internationally.

6.20 Conclusion

According to Merret (1997) free trade theories were criticised by List (1841) in his *National Systems of Political Economy* which put forward the argument that comparative advantages and the international division of labour were not immutable laws of nature, but rather the outcome of the uses of economic and political power. The British advocated free trade only after they had weakened their opponents through protectionism and military force (Merret 1997).

Critics of Ricardo's position have questioned the intent of his theory. Ricardo's models defended how logical and fair it was for Britain to produce and trade textiles, a high value-added industrial product, for Portuguese wine, a low value-added agricultural product. But Merrett (1997) argues that 'Ricardo certainly understood that after the defeat of the Spanish Armada in 1588, the British had dominated the Iberian Peninsula. Spain and Portugal had been virtually eliminated from participating in the global expansion of capitalism during the seventeenth century by means of a series of commercial treaties that culminated in the

Methuen Treaty of 1703' (Merret 1997 p.107). Ricardo in essence defended for the exploitation of Portugal by England on the presupposition of a natural law of comparative advantage (Merret 1997). 'Free trade was presented as a natural neutral concept, however it concealed the existence of unequal exchange and hid the process of technological underdevelopment. The objective and scientific economic discourse camouflaged a justification for geopolitical domination (Merrett 1997 p.107).

Critics of neoclassical trade theory argue that because of differences in technology, capital and wages, it still represents a justification for unequal exchange between the MDCs and LDCs. It represents an oversimplification of the world by concentrating only on the most efficient allocation of resources and avoiding issues such as political security and economic survival (Merrett 1997). Even if free trade on the basis of comparative advantage can be shown to increase total wealth it says 'nothing about distributional equity within society' (Merret 1997 p108).

Supporters of free trade regimes argue that environmental measures can be achieved after a certain point of economic development has been reached. The uneven nature and speed of economic development and the exploitative nature of present trade patterns means many countries will not reach such a point in the time constraints imposed by ecological problems. The theory of comparative advantage calls on countries to specialise in production and utilise natural advantages and to trade these goods to purchase other needed goods from efficient producers. If a country's natural advantage is in tropical timber derived from rainforests then the conflict between international trade and conservation is obvious.

Conservation may occasionally perpetuate poverty, however development as witnessed in the case study has also done little to alleviate poverty, resulted in the loss of resources and actually decreased the resources available to the rural poor.

Economic growth spurred by increasing international trade and the competitive, capitalistic model of development that usually accompanies it has spread to all corners of the earth. While some industrial expansion has led to the adoption of less polluting technology, the extent of expansion and the ruthless quest for resource extraction has outstripped the ability of many states to monitor and control it, even when the political will has been apparent. This reflects the adoption of only half the Rio bargain. The goal of an open multilateral trading system is being achieved, while the adoption of sound environmental policies is languishing. The extent of the failure to adopt environmental policies was witnessed at the five year follow up to the Earth Summit, which detailed continuing patterns and processes detrimental to the environment. To an extent this failure can be attributed to the competitive international trade agenda which holds non-state intervention as a positive. Moreover, global industries gain advantage through lower environmental standards and have actively sought such situations or manoeuvred to protect existing advantages. Trade rules as they currently stand effectively entrench the patterns of economic development that have given rise to the current ecological crisis.

Programs proposed within the sustainable development agenda can be environmentally beneficial. Conceptions of eco-efficiency can mitigate some direct environmental impacts but do little to tackle the basis of the environmental crisis such as materialism and excessive

consumption. Sustainable development is a growth-based ideology. Its neoclassical economic theoretical underpinnings suggest that increasing global wealth through free international trade will benefit all participants. This position fails to recognise the exploitative and competitive nature of the international trading order. Internationally specialised economies tie the world together in an ever increasing web of complexity that limits the possibility of individual country action in environmental matters if international competitiveness is to be maintained or trade regulations upheld. If sustainable development is to achieve its goals it must recognise that many of the inherent assumptions regarding the environmental benefits of international trade are fundamentally flawed.

-7-

The Environmental Effects of Trade Organisations, Trade Theory and Trade

7.1 Introduction

The extent to which trade theory has encouraged the current push for global free trade has been detailed in previous sections of this thesis. Neoclassical trade theory has provided a justification for the expansion of trade and has promoted its environmental benefits. The assumptions inherent in mainstream conceptions of sustainable development regarding the environmental benefits of trade which have built upon the neoclassical framework have been questioned in the previous chapter. Many of the obvious and controversial effects of international trade on the environment such as the dominance of market based instruments for environmental policy, the relationship between economic growth and environmental quality and the shift of industries to countries with lower pollution standards have also been covered in previous sections. This chapter presents some of the other environmental effects

that acceptance of trade theory and expanding international trade will have. For example, the World Trade Organisation bases its premises on the benefits of free trade in classical trade theory. The effect that the WTO and its rulings have had on the environment in terms of national legislation and destructive patterns of production is therefore discussed. Wider questions involving trade and expanding resource consumption, the subsequent need for a shift from an empty to a full world economic paradigm, the effect of ecological shadows, and trade related cultural and ecological homogenisation are considered, with evidence from the case study used where appropriate.

7.2 Competition and the Environment under GATT and the WTO System

Increasing international trade intensifies competition. Trade economists welcome this, arguing that it provides stimulation for efficiency and technological innovation. A global system of trade ensures that technological innovation can be adopted elsewhere in the world. If this innovation results in technology that is more environmentally friendly than that which it replaces then this is a movement toward sustainability. However, competition imposes its own environmental costs. 'A country with strict environmental regulations may find its economy undermined by competition from countries with more lax environmental standards. Trade liberalisation as practiced under GATT laws administered by the World Trade Organisation entail market access agreements which may undermine the effects of national standards and laws' (Brack 1995 p.500). Environmental laws are established nationally, while trade laws are decided internationally. Article XX of the GATT allows exceptions to trade rules for trade measures with environmental objectives subject to tests designed to ensure that these measures affect trade as little as possible. The GATT

Secretariat in 1992 stated that: 'GATT rules place essentially no constraints on a country's right to protect its own environment against damage from either domestic production or the consumption of domestically produced or imported products' (GATT Secretariat 1991 p.23).

A country wishing to use the environmental exceptions in Article XX is required to: 1) demonstrate the necessity to protect its own environment; 2) demonstrate the need to use a trade impacting measure to do so; and 3) ensure that if a trade impacting measure is adopted, it is the least trade restrictive measure available to achieve the objectives. Section one of the regulation has been used to rule out environmental laws that seek to protect environments outside the enacting country's borders. The second and third parts to reduce the potential trade impacts from environmental measures, and to prevent environmental measures from being used as a disguised limitation to trade (UNEP 2000).

GATT rules

> do not allow WTO members to ban the import of goods produced by processes which result in more pollution than would be permitted in industries based in the importing nation. This ruling holds even if the pollution caused by the production affects the importing country, either through transboundry effects or through its interest in the global commons (such as the atmosphere, ocean, species which inhabit them, etc (Brack 1995 p.500).

The underlying principle of GATT/WTO is non-discrimination. This principle 'forbids countries from discriminating between "like" products produced locally and those produced in any other country. The concept of like product is based on the properties of the physical product imported and not on the production and process methods (PPMs) that were used to make the product' (Leveson-Gower 1997 p.155).

The concept of comparative advantage is the basis for the policy of non discrimination: 'countries must be allowed to exploit their comparative advantage through using the PPMs most efficient for their country and thus should not be discriminated against based on their choice of PPMs' (Leveson-Gower 1997 p.156). Trade rules prescribe that the environmental policies of exporting countries cannot be used to limit trade in products unless those products themselves are the source of environmental harm in the importing country.

This means that a ream of paper produced in Indonesia from mills with questionable environmental safeguards using timber from rainforests must be treated the same as one produced in a state of the art process with timber from a well managed plantation in another country. According to Leveson-Gower (1997) 'these two reams of paper would be considered like products from a WTO viewpoint and would therefore deserve similar treatment. But from an environmental viewpoint they are obviously not like products' (p.157). As the case study illustrates the production of the Indonesian ream is likely to have an environmental impact on other countries through climate change and biodiversity loss. Furthermore, the burning of logged-over forest for the establishment of eucalyptus plantations to supply the pulp and paper industry was a major contributor to the smog crisis

that has gripped Southeast Asia during 1997 and 1998. However, any country that sought to place trade restrictions on the import of Indonesian paper based environmental concerns could be challenged in the WTO (Leveson-Gower 1997).

7.3 The Tuna-Dolphin Dispute

Perhaps the most famous precedent regarding the conflict between trade rulings and environmental measures is the Tuna-Dolphin dispute between the US and Mexico in 1991.

> In the late 1980s, fishing fleets, mainly from Mexico, caught and killed about 30,000 dolphins a year in the process of harvesting tuna in the eastern tropical Pacific Ocean. In 1991 the US Government acting under the provisions of the 1972 Marine Mammals Protection Act banned the import of tuna and tuna products from Mexico on the grounds that the Mexican dolphin kill ratio was 1.25 times higher than that of US fishermen. Mexico argued that its right to sell tuna in the United States had been violated and asked for a GATT dispute panel to rule on the matter' (Brack 1995 p.501).

Even though the GATT panel reached a decision in 1991, Mexico reached a deal with the United States and dropped the case. To clarify the outcome the European Union then brought a separate case which ensured that a formal decision was reached by GATT in 1994 (Leveson-Gower 1997).

The United States unsuccessfully argued in both cases that their import ban was allowable under GATT Article XX exceptions for environmental purposes. 'The reasoning given by both the panels was slightly different but the key point in both rulings was that tuna are like products regardless of the level of harm caused to dolphins' (Leveson-Gower 1997 p.157). The panels argued that while GATT members are entitled to ban imports of products which are themselves environmentally harmful, it was not the tuna itself which cause the damage but rather the way it was caught, and trade measures based on such 'process and production methods' were not permitted under the GATT. If the United States sought to defend the stopping of Mexican tuna at its border on grounds relating to the composition of the tuna, such as it being contaminated, this would have been allowable. 'Pure tuna and contaminated tuna are not considered like products. However under GATT rules tuna was tuna regardless of how many dolphins died' (Leveson-Gower 1997 p.158).

7.4 Reformulated Gasoline

The first case arbitrated by the World Trade Organisation has also had significant environmental repercussions. In the reformulated gasoline case of 1996, US Clean Air Act Regulations were found to be inconsistent with GATT rules and the US was requested to amend its regulations or face retaliatory trade sanctions in the order of $150US million per year.

Regulations imposed under the auspices of the Clean Air Act were not imposed to regulate trade or improve the competitive position of US producers, but to reduce serious air quality problems. Rather, the regulations sought to impose performance specifications for gasoline.

In seeking an effective and economically feasible regulatory approach, the US Environment Protection Authority designed a program that required gradual improvement based on past performance. To accomplish this various approaches dependent on the amount of information available were authorised for determining the performance and composition of gasoline sold in the baseline year of 1990.

> Where reliable information was not available, companies would have to sell gasoline no more contaminated than the industry average for 1990. For corporations that could produce accurate records a more precise determination was allowed. Given the difficulties associated with trying to elicit information from all foreign sources of gasoline imported into the US, the Act held all imported gasoline to the 1990 industry average. As a result some domestic and foreign producers were treated identically, some domestic producers were held to higher standards than foreign suppliers and some to a lower one (Shrybman 1997 p.35).

Petroleum companies based in Brazil and Venezuela pressed their governments to file a complaint with the WTO on the basis that their products were being held to a higher standard than was being applied to US refiners. The trade panel's decision was that US Clean Air Regulations were in breach of GATT national treatment provisions. According to the panel the United States could not defend their action by reference to GATT Article XX which allows countries to implement environmental or resource measures considered

necessary to protect human, animal or plant life health as it had failed to meet three primary conditions. Shrybman (1997) describes these conditions as

> (1) that it had reviewed all reasonably available alternatives for accomplishing its environmental or resource policy objectives and determined none was consistent with GATT provisions; that (2) it had adequately explored the possibility of negotiating multilateral agreements with all of its trading partners that might be affected by the regulatory initiative, in order to find some consensual resolution; and that (3) it had chosen the least trade restrictive measure for achieving its goals Foreign refiners were thus allowed to continue to import gasoline into the US that was more contaminated than the 1990 industry average' (p.35).

Under WTO rules countries which lose a tribunal decision must alter their laws to comply with the WTO agreement or face ongoing trade sanctions or fines. In this case the Clinton administration moved to change the offending provisions of the Clean Air Act.

7.5 Institutional Focus and Sustainable Development

Soon after the Reformulated Gasoline case another World Trade Organisation tribunal ruled that a European Union ban on beef produced in the United States from hormone treated cows violated WTO rules as it had not been scientifically proven that the product was actually dangerous. European consumers and public health advocates urged the European Union to defy the WTO ruling and the trade bloc is now suffering retaliatory tariffs (Sforza

1999). Moreover it is not only laws designed to protect domestic environments that are coming under challenge at the WTO. For example in 1998 a WTO appellate panel ruled that the United States could not maintain an embargo on shrimp from countries that have not adopted regulations to protect endangered sea turtles from drowning in shrimp nets, despite the fact that the measure was specifically implemented to meet the requirements of the Convention on Trade in Endangered Species (CITES).

Recent international developments indicate that even measures designed to meet negotiated market orientated protocols can come into potential conflict with the rules of the trading system. To help meet its commitment under the Kyoto Protocol, Japan set new fuel efficiency requirements for all cars, particularly cars in the medium weight category dominated by European and American imports, where the standards were less rigorous when compared to those applied to smaller and larger cars (Sforza 1999). These requirements led to the United States and the European Economic Union (EU) (acting at the request of Daimler-Chrysler and the Ford) to make a formal complaint to the WTO on the basis that the policy breaches trade rules as it essentially places a heavier burden on imported products (Sforza 1999). (As at the time of writing a final ruling in the case had not been made).

The barriers presented by trade rules for laws with an environmental objective have proved difficult to overcome particularly if the measure under dispute is compared to purely hypothetical alternatives, rather than policies which are practical and implementable within countries (UNEP 2000). No government has made successful use of the GATT Article XX

provision allowing countries to depart from trade rules in order to protect public health and the environment. No GATT or WTO panel called to rule on an environmental exception has accepted the need for such an excepption.

These disputes demonstrate a basic clash between free trade and environmental principles. While there is a well entrenched and powerful international trade institution in the WTO, with a clear set of enforceable rules within a narrow frame of reference, there is no comparative organisation to represent the interests of the environment (Leveson-Gower 1997). 'The United Nations Environment Program (UNEP) has limited resources and mandate and no rule making power' (Leveson-Gower 1997 p.159). There are over nine hundred international legal instruments that are either fully devoted to environmental issues or have one or more significant provisions directed to environmental protection (Brown-Weiss 1992). Leveson-Gower (1997) considers such legal instruments as 'recently established, weak, fragmented and lacking effective enforcement mechanisms' (p.159). National governments have demonstrated a reluctance to rescind sovereignty in this area and many trade economists still regard differences in environmental standards and preferences as a legitimate component of comparative advantage. Furthermore, there are no

> effective international institutional means to reconcile these different areas of law within the larger framework of achieving ecologically sustainable development. This institutional inadequacy is a fundamental barrier to balancing trade and environmental rights and responsibilities between

countries within an overall cooperative framework of ecologically sustainable development at the international level (Leveson-Gower 1997 p.159).

Previous trade and environment disputes brought before the WTO exemplify the narrow focus of the organisation. Dispute panels are comprised of trade experts, generally lawyers who have made careers of representing corporate clients, and examine disputes only in terms of trade rules. Hearings are closed to the public and there is no provision for the presentation of alternative perspectives from non-government organisations (Retallack 1997). Trade rights and responsibilities established by GATT/WTO stand unless an environmental necessity can be proven under a strict set of scientific and trade criteria (Leveson-Gower 1997). The WTO and most trade theorists stress the dangers of environmental policy for the trade system rather than the reverse and claim that the trade/environment interface has an above average risk of being exploited by special interest groups to their own benefit and at the expense of the general interest (Anderson and Blackhurst 1992). This reflects the trade system's overriding priority which is to eliminate all types of protectionism regardless of its intent.

The distinction made between product and process in the GATT panel's Tuna-Dolphin report takes on a different hue when global environmental sustainability is considered. Maintaining the environmental services of the planet is essential in all formulations of sustainable development and as such the process by which products are made is as important as the product. Without the ability to ban products produced by environmentally unsustainable practices, countries will be lacking an essential measure for achieving

environmentally sustainable development. 'It is an anachronism that at a time when people are focusing on changing development practices to make them sustainable, the trading community is forbidding the use of trade measures to assist in this process' (Brown-Weiss 1992 p.731).

7.6 Subsidising Environmental Destruction

The WTO Agreement on Subsidies and Countervailing measures specifies that governments should not subsidise domestic producers in ways that enhance competitiveness internationally. 'Such subsidies are regarded as distorting true competition and therefore at odds with the free market model. Some subsidies are prohibited under the WTO agreement while others are "actionable" and may justify the imposition of measures such as countervailing duties by a country whose producers are prejudiced by the subsidy' (Shrybman 1997 p.31). GATT provisions have been used to challenge a variety of government programs and practices as representing unfair subsidies. The trade community has refused to recognise however, the absence of environmental regulations represents an unfair subsidy and no trade complaint has raised this issue.

The absence of environmental or resource conservation regulations can make domestic producers more competitive in both national and international markets (Shrybman 1997). Both Indonesian pulp and paper producers and timber companies operating in Southeast Asia have been able to gain competitive advantage in international markets on this basis. As such producers are free to externalise the environmental costs of production it can be argued that they are being subsidised at public expense. It makes little difference that the currency

of the 'subsidy is a public natural resource in national forest and a community's clean air and water, rather than a public fiscal resource in tax revenue' (Shrybman 1997 p.31).

The practice of exporting goods from areas which fail to impose or police environmental protection is termed as "ecological dumping". Article VI of GATT regulations describes dumping as the practice by which the products of one country are introduced into the economy of another country at less than the costs of production. Exports from countries whose pricing policies fail to include environmental externalities and are therefore priced below the real costs of production should be considered as 'dumped' onto international markets. However 'GATT officials have been no more receptive to this argument than they have been to the notion that absent environmental regulations be considered subsidies' (Shrybman 1997 p.31).

The belief that international trade promotes global efficiency because of international specialisation and the maximisation of comparative advantages is based on a limited perspective that regards economic imperatives as the highest goal of human activity. Efficiency is measured in terms of economics and not ecology. The lack of appropriate environmental policies confers a competitive advantage to nations and is an indirect form of subsidy. As demonstrated in the previous chapter there is no automatic link between economic efficiency and positive environmental outcomes; the appropriate policies have to be put in place (Brack 1995). The operation of a clearly defined set of rules regarding international trade and the intensified competition between nations can militate against the implementation of policies at the domestic level.

7.7 Expanding Resource Consumption

In developing countries the gearing of entire economies toward increasing raw material exports for international trade impacts heavily on the environment at the point of extraction or production (Lang and Hines 1993). While the case study presents a detailed account of the political ecology of timber extraction in Indonesia, attempts to increase domestic processing of raw logs within the archipelago are also informative of the way GATT regulations administered by the WTO restrict the sovereign rights of countries to exercise control over their natural resources via export controls. In 1985 Indonesia banned the export, though not the felling of timber and rattan from its rainforests. It argued that by carrying out more of the processing it received a greater profit. Therefore it had more motivation to protect the natural resource on the basis of its greater economic return. This ban was challenged by several countries which argued that Indonesia was restricting the supply of raw materials. This it was felt would allow Indonesia to control the manufacture of value added products such as furniture previously made in Europe and Japan. Several countries argued that the log ban contravened Article 1 of the GATT which says that foreign and domestic industries must be treated equally (Lang and Hines 1993).

Similarly, a fisheries management scheme in Canada which sought to restrict exports of unprocessed herring and salmon as part of a conservation and management scheme was not allowable. The restrictions were designed to enable local fishermen, many of them native Americans, to earn a living while limiting fishing, however a GATT panel argued that the ban was not allowable as it was designed to protect Canadian processors and employment

and that therefore the primary goal of the policy was not to protect fish (Lang and Hines 1993).

While the ability of free international trade to greatly stimulate global economic growth is considered one of its most attractive traits, one of the major problems as it is currently practiced and administered is that it recognises few environmental limits to the extent, if not the type and location of this growth. This is not surprising given that the trade ideology which has influenced the GATT and WTO stills draws heavily on the cornucopian works of Adam Smith and David Ricardo.

The work of Smith places little value on the raw materials upon which agriculture and industry are based as it assumes that these are free gifts of nature and available in infinite quantities (Eyre 1978). Similarly David Ricardo at the beginning of the nineteenth century wrote of the 'indestructible' powers of the land and argued that: 'the brewer, the distiller, the dyer, make incessant use of the air and waters for the production of their commodities, but as the supply is boundless, they bear no price' (Ricardo [1817] quoted in Eyre 1978).

Smith and Ricardo were both writing at the beginning of the Industrial Revolution when the vast majority of the population of the world were still at the pastoral and peasant stages of cultural development. Technological innovations and the division of labour were increasing and this created significant social changes (Eyre 1978). The efficiency of specialised labour and machines in comparison to the competence of hand labour was being demonstrated by economic success (Eyre 1978). Moreover vast areas of the earth were still unexplored by

people of European origin and the natural resources of even the larger areas were almost completely unexploited. Smith and Ricardo both recognised the possibility of physical limits to growth within countries but believed they could be overcome through technological innovation and the expansion of international trade (O'Riordan 1981). Given the historical context in which both were writing, it can be appreciated why Smith and Ricardo would focus on the benefits of the division of labour and industrialisation rather than the possibility of global land shortages and the depletion of the earth's store of metal ore and mineral fuel.

Compelling evidence can be compiled that at the end of the twentieth century limits to growth unimaginable to Smith and Ricardo are now being reached. Vitousek *et al* (1986) estimate that the human economy uses directly or indirectly about 40 percent of the net primary product of terrestrial photosynthesis. This is at the same time as land degradation, desertification, urban encroachment onto agricultural land, blacktopping, soil erosion and pollution is increasing, as are the food needs of expanding populations (Costanza *et al* 1997). Under the present economic model a doubling of the world's population would lead to the appropriation of 80 percent and shortly thereafter 100 percent of net primary terrestrial photosynthesis by the human economy, a situation which Daly (1991) argues is ecologically impossible and socially undesirable (Costanza *et al* 1997).

Climate variability makes it almost impossible to prove that the global climate has changed as a result of greenhouse warming caused by fossil fuel burning. However seven of the hottest years on record have occurred in the last 11 years and the 1980s were on average 1 degree Fahrenheit warmer than the 1880s (Costanza *et al* 1997). Humanity's social and

economic infrastructure has evolved over the past 7000 years in a global climate that did not vary more than 2 degrees Fahrenheit from today's climate (Costanza *et al* 1997). Despite differences on the rates and impacts of climate change there is now virtually total acceptance within the scientific community that it is inevitable. The thinning ozone layer also provides evidence that the global ecosystems capacity to absorb CFC pollution has been exceeded. 'Since the limits have been reached and exceeded, mankind is in for damage to environmental services, human health, and food production' (Costanza *et al* 1997 p.12).

The case study presented earlier in this thesis detailed the extent of tropical forest loss in Indonesia as a result of internationally constructed demand (ICD) for pulp and paper and its contribution to the loss of biodiversity. Estimates are that the Earth is losing approximately 70,000 species per year and that over the next century rates of species extinction may become 1,000 and 10,000 times the historical or background rate (Yencken and Wilkinson 2000).

Thus limits to growth physically determined by the earth's eco-system which were unimaginable to Smith and Ricardo are regularly being crossed. The fact that they are ignored by most modern proponents of trade who believe in continued growth represents the need for what Daly (1993) terms the change from Empty World Economics to Full World Economics.

7.8 From Empty to Full World Economics

According to Daly's (1993) thesis the human economy has passed from an era in which man-made capital represented the limiting factor in economic development (an empty world) to an era in which increasingly scarce natural capital has taken its place (a full world). Thus attempts should be made to maximise the productivity of the scarcest (limiting) factor, as well as trying to increase its supply. In a full world economics situation, economic policy should be designed to increase the productivity and amount of natural capital.

Daly (1993) argues that the economics profession has failed to reflect the transformation from a relatively empty world to a relatively full one for a variety of reasons. Foremost amongst these is the deceptive pace of exponential growth. With a constant rate of growth the world will go from a half full one to a full one in one doubling period – the same time frame it took to go from one to two percent full. Moreover, the rapid change from the perceived abundance of the world of Smith and Ricardo to the relative scarcity of the present has exceeded the speed with which fundamental economic paradigms usually shift.

> According to physicist Max Planck, a new scientific paradigm triumphs not by convincing its opponents, but because its opponents eventually die. There has not yet been time for the empty-world economists to die - and meanwhile they have been cloning themselves faster than they are dying by maintaining a tight control over their guild. The disciplinary structure of knowledge in modern economics is far tighter than that of turn of the century physics, Planck's model. Full world economics is not yet accepted as

> academically legitimate; indeed it is not even recognised as an academic challenge (Daly 1993 p.81).

A standard assumption of neoclassical economics is that the factors of production are highly substitutable. According to Daly (1993) this is a prime reason why few economists have noted the change in the pattern of scarcity. Productivity of man-made capital is more and more limited by the decreasing supply of complementary natural capital for which there is no substitute. In the past, when the scale of the human presence in the biosphere was low, man-made capital played the limiting role. The switch from man-made to natural capital is thus a function of the increasing scale and impact of the human presence.

> Natural capital is the stock that yields the flow of natural resources - the forest that yields the flow of cut timber; the petroleum deposits that yield the flow of pumped crude oil, the fish populations in the sea that yield the flow of caught fish. The complementarity of natural and man-made capital should be clear when we ask, What good is a sawmill without a forest? A refinery without petroleum deposits? ... Beyond some point in the accumulation of man-made capital the limiting factor on production must become remaining natural capital (Daly 1993 p81-82).

Countries have evaded limits to growth by using the natural capital remaining in the global commons or by establishing trade networks with nations willing to trade theirs. The case study is just one example of the way trade between developed and developing nations

invariably involves the transfer of natural capital. International trade makes it possible for some countries to live beyond their geographic carrying capacity by importing natural capital from other countries and 'this tendency in individual countries tends to push the world economy to grow beyond its optimal scale relative to the containing ecosystems' (Daly 1996 p.149). The concept of ecological shadows is useful for describing this tendency of trade as it illustrates the way in which limits can be avoided nationally if they are not respected internationally.

7.9 Ecological Shadows

Major urban and industrial centres of the world are involved in complex international networks for trade in goods and services of all types. These centres rely on the ecological capital of other nations to provide food, energy, materials and even land, air and water to dispose of their waste by-products. The imported ecological capital forms the 'shadow ecology' of any economy. 'In essence the ecological shadow of a country is the environmental resources it draws from other countries and the global commons' (McNiell *et al* 1991 p.59). While the term ecological footprint refers to the total ecological impact of a country an ecological shadow refers mainly to that part of the footprint which is projected onto other countries.

All countries cast ecological shadows, although 'industrialised nations in the North tend to draw far more environmental resources than those in the South' (Dauvergne 1997 p.10). Developed Northern countries with just 25 percent of the world's population consume 70 percent of its energy, 75 percent of its metals, 85 percent of its wood and 60 percent of its

food (Dauvergne 1997). Nations with few resources who are highly industrialised tend to cast the largest ecological shadows. Immediate geographic constraints to economic growth in globally integrated countries can be avoided through the establishment of trade networks. Countries such as Japan, the Netherlands or Singapore who are highly industrialised have preserved and improved their natural environments by 'shifting the burden of unsustainable natural resource consumption to others through trade' (Dauvergne 1997 p.10). The case study presented on the tropical timber trade in Southeast Asia provides evidence to support this assertion in respect to Japanese consumption of timber which is much greater than that which could be provided through domestic supplies. Japanese demand for timber and the complicated economic and organisational structures designed to ensure its supply has contributed to the over exploitation of timber resources in Southeast Asia and the rise of a political and economic elite whose fortunes are closely tied to the trade. The success of Japanese and indigenous industry in exploiting the rainforests of Southeast Asia led to a glut of cheap timber on international markets and contributed to the grossly inefficient and wasteful use of a potentially valuable resource by global industries.

This element of the case study provides evidence for another of the environmental impacts of trade. Reducing trade barriers has encouraged the exploitation of primary resources in remote areas of the globe at the expense of secondary and recycling activities that might compete with them. The success of Indonesian capitalists working in joint venture partnerships with international conglomerates has been in producing vast quantities of pulp. This has impacted on the global pulp market which has historically been prone to boom and

bust cycles. The existence of a large source of pulp has affected the financial viability of paper recycling schemes around the globe.

Deforestation in Southeast Asia, particularly the role of the international paper industry in same, is also a prime example of the displacement of environmental problems. Increasing concern for remaining forests in North America and Europe led to the search for new and cheap sources of pulp. Industry and technology becomes far more mobile under a free trade situation with the whole-scale importation of machinery and management skills. Extreme cases of this scenario are the dismantling of northern pulp lines and their reconstruction in Southeast Asia in order to exploit underpriced rainforest timber or plantation grown trees.

This situation indicates that the ecological shadow cast by a country is more than the amount consumed or destroyed and should incorporate the price paid and the effect on resource management in exporting countries (Dauvergne 1997). Countries that consume enormous quantities of resources without paying full price and without restoring degraded areas cast far greater shadows than other countries consuming the same amount, yet paying high prices for resources from sustainable sources and providing support to facilitate better management (Dauvergne 1997). Analysing the ecological shadow cast by any country should therefore consider the amount consumed, the price paid for the resource, the source of the resource, and the impact on government actions and corporate practices on resource management (Dauvergne 1997).

7.10 The Homogenising Influence of Trade

The dominance of free market values and the emergence of a deregulated trading system has the ability to impose patterns of biological and cultural uniformity across the planet. As Hay (1989) argues:

> The triumph of market values is the most formidable obstacle to halting the great tragedy to which our generation is witness - the genetic and cultural standardisation of the globe. To allow free reign to market forces is to hasten the destruction of species and traditional human cultures for neither have value that the market can register. The market is a human institution and it is a register of human needs: it can take no cognisance of the interests of other species. Nor is there any point in pleading rights of future human generations in defence of preserving diversity because the unborn have no buying power (Hay 1989 p.94).

The influence of trade in this homogenisation process is identified in the case study in a variety of forms. The establishment of the pulp and paper industry and its associated plantations has led to the large-scale replacement of tropical forests, universally celebrated as some of the most diverse ecosystems ever, with monoculture plantations of eucalyptus and acacia to meet international demand for pulp and paper products. Without the influence of trade the demands on the forest resource would be nowhere near as great.

Trade liberalisation often facilitates the replacement of labour intensive peasant based agriculture with modern industrial agriculture. Large operators with access to capital and

markets, and subsidised producers in developed nations who often achieve additional support through export enhancement programs tend to thrive under a free trade regime. Ensuing falling commodity prices decrease the competitive position of peasant agriculturists, driving them to accept wage employment. Conventional economic analysis measures this change positively as average income rises. However the process may result in an uneven distribution of benefits and increased levels of inequality as well as the loss of national food security as import dependence becomes structurally entrenched (Goodman and Howarth 1997). The change in Mexico from national markets being supplied by small scale traditional agriculturist to a dependence on imported low priced maize grown in the United States after the implementation of the North American Free Trade Agreement (NAFTA) is a prime example of this. Beside eroding the terms of trade for traditional farmers, effectively reducing their standard of living, the change also threatens the genetic diversity of maize as many varieties are only maintained through small scale agriculture (Goodman and Howarth 1997).

In terms of economic diversity the establishment of the pulp and paper industry in Indonesia has decreased the number of forest industries and producers. Cottage industries which previously relied on the forests to collected products such as food and rattan have been displaced by multinationals with the active support of the state. The multinationals have many advantages over the smaller industries in obtaining the rights to exploit the forest, their incorporation into an international distribution network with access to wealthy first world consumers which promises massive profits and privileged access to the ruling elite of countries being two of the most obvious. Multinationality also provides many advantages

over companies located in a single location. The economies of scale developed by large companies and their vertical integration of all stages of production and global distribution networks allows them to out-compete national capital in free market situations and can lead to global market domination by a relatively small number of firms.

These types of ecological homogenisation are in some way planned and to be expected with the expansion of the trading system. However it should also be expected that with increasing volumes of trade come increasing chances of biological invasion. Bio invasion, the spread of non native "exotic" pests, may be the least predictable of all the major dimensions of ecological decline. According to Thompson-Cambell and Schlabaum (1994) it is one of the most dangerous, because exotics can create pressures for which there is no local evolutionary precedent and native species may not be able to adapt to live with the introduced species. As such, the result of bioinvasion is often the extinction of native species.

Most of the world's internationally traded commodities travel by ship for at least part of their transit to markets (Bright 1998). The global merchant shipping infrastructure involves more than 28,000 ships which carry an increasing volume of goods annually. Between 1970 and 1996 the volume of traded goods increased from 10,654 billion ton miles (the standard industry measure) to 20,545 billion ton miles (Bright 1998). Ballast water taken on or discharged after cargo is unloaded or loaded or fuel burnt to retain stability has effectively imposed a second set of currents on the world oceans. Thousands of different species such as plants, pathogens, parasites, herbivores, carnivores and scavengers have been transported

around the world by ballast water. In 1991 a cholera outbreak which killed thousands of people and infected several million in Peru was linked to ballast water discharge from ships arriving from South Asia (Bright 1998).

Not just coastal and aquatic ecosystems are being affected (Bright 1998). Containers prominent in modern trade provide a means of introducing exotic species within continents. Containers as they are often stacked for weeks or months in ports and road and rail freight depots allow for potential pests to enter. They offer a safe haven for any species inside as they are rarely cleaned, difficult to inspect and not unpacked until they arrive at distant destinations (Bright 1998). Containers have been identified as significant pathways for insects, weeds, seeds, slugs and snails. Moreover the extent of containerised trade is steadily increasing. Containers have become a major link between the industrialised and developing world. More than half of the world container volume passing through developing countries (Bright 1998).

The modern infrastructure of trade is far greater than previous eras. At the start of the twentieth century cargo ships had an average capacity of 3,000 imperial tons. Modern vessels of 150,000 to 250,000 tons are common with the largest ships exceeding 600,000 imperial tons (Bright 1998). According to Bright (1998) the sheer increase in the size of the world's merchant fleet helps explain why ballast water invasions have increased dramatically during the 1970s and 80s. Other means of transporting goods internationally have also undergone a dramatic increase. Air cargo shipments have grown from 44 billion revenue ton kilometres in 1985 to 123 billion in 1997 (Gersch 1999). Each ton of air cargo requires nearly fifty times as

much energy as shipping. Beside its obvious environmental effects in terms of pollution, air cargo can deliver goods and associated pathogens almost instantly anywhere in the world.

7.11 Conclusion

Previous disputes arbitrated by the World Trade Organisation indicate that its effective operation has presented a significant barrier to new developments in environmental policy. Trade rules as they are currently practiced have frustrated many attempts to introduce new practices and policies. Essentially this difficulty arises because of the limited focus of the Organisation and its adherents to many of the fundamental assumptions of mainstream sustainable development and neo classical economic trade policy. The WTO fails to recognise that an absence of appropriate regulation is a form of subsidy or that products which fail to include the full costs of their production are being dumped on international markets. Current trade rules are geared toward encouraging economic growth and expanding resource consumption in line with the theories of Smith and Ricardo. They fail to recognise that natural rather than man-made capital is now the limiting factor in production and it is on this ground that Daly calls for a change in the economic paradigm.

Trade provides a means by which countries can avoid immediate geographic constraints to economic growth. This removes a natural balance from the system and exerts continued pressure to open new areas for exploitation. Any realistic measurement of an individual country's environmental impact must include a consideration of the ecological shadow which it casts on other nations. International trade is a powerful homogenising force across the global eco-system. Success in the international trading arena is often based on

standardised products and production methods. Multinational corporations are able to dominate in an open trading arena. The economies of scale and resources of such firms raises the bar of competition to a new height. Their success and profit is often achieved at the expense of diversity in eco-systems and cultures. Unplanned ecological homogenisation can only be expected to increase as trade across national boundaries continues to expand.

-8-

The Political Ramifications of International Trade

8.1 Introduction

Determining the political impacts of an expanding deregulated international trading system is a complex task, as the effects will vary between trading blocks, countries and regions. Impacts within countries will be dependent upon variables such as their relative power position within the international trading hierarchy, level of development, extent of foreign ownership and type of industrial specialisation. A political ecology approach seeks to simplify this complexity by recognising that relationships between actors in the global arena such as international bodies, states, corporations, and individuals and their link to the physical environment are conditioned by power relationships. Political ecology adopts a minimalist definition of power, understanding power as 'the control that one party has over the environment of another party' (Bryant 1997 p.7). Acceptance of this relatively simple definition of power should not obscure the broader debate conducted within the political science literature regarding the nature of power and its definition as a relation, tool or structure. In terms of the environment and literature reviewed thus far in the thesis the use

of power in each of these ways has been witnessed. Power conditions relations at all levels in the international trading system; it has been used a tool to supress dissent and its structural underpinnings can be witnessed throughout the formulation and outcomes of the moding trading system. The thesis now examines the various ways and forms power manifests itself in the international trading system at the international, national, corporate, and individual level. This achieved primarily through examining who has gained power and who has lost power over the environment in the context of an expanding global trade system.

8.2 International Trade and the Shifting the Point of Control

The increase of spatial distance between ecologically destructive behaviour and the end point of usage of the resultant product is an inevitable consequence of an integrated global trading environment. Power over environmental outcomes is often exercised in an impersonal and unintentional way by those who are active in markets. Therefore international trade can shift the point of decision making away from communities that have traditionally controlled resources to global financial centres. For example in some forest areas of Indonesia decisions about which forest is to be felled and what purpose it is to be used for has shifted from local control to the boardrooms of international forestry and financial conglomerates. Governments compliant to the wishes of multinational and national timber operations have ensured decisions favourable to the operations of the global economy have been implemented and protests about this loss of control over essential resources have been suppressed.

'From the position of the international market investor, the sustainability of the forest industry being invested in is not usually a prime consideration. Individual investors often

focus more on interest rates, rather than the stock of forest resources' (Costanza *et al* 1997 p.162). Economists argue that the value of a corporation's assets will decline if it treats its assets unsustainably. However, as the case study shows, corporations can and do move onto other forests when stocks become depleted. Economic models assume good information. Yet the difficulties involved in ascertaining a universal meaning for deforestation and the wide variation in estimates, as uncovered in the case study, points to a distinct lack of information. 'Global agencies such as the Food and Agriculture Organisation and the International Tropical Timber Organisation that are currently trying to oversee the whole picture with respect to resources and economic processes struggle not only to accurately depict the current situation, but also have neither the resources or the capacity to change damaging practices' (Costanza *et al* 1997 p.162). The important point to be illustrated is that historically people were closer to the resources that they used and in a better position to monitor the overall assets on which they depended. Moreover, they generally had the power to change the destructive behaviour of resource users.

This also illustrates the point that international trade is an elite process. It is conducted by economic and political elites within various countries, and focusing on the interests of key elites in the global economy provides a more political account of the adoption of policies related to globalisation. In many of the timber producing states of Southeast Asia that are pursuing policies of economic liberalisation, elite interests are not institutionally accountable to society in any sense. Control of state power can lead to the control of economic assets rather than vice versa. Indonesia is a prime example, with state power leading to the annexation of forests for profit by the ruling elite. Keohane (1997 p.170) argues that such societies, even if nominally democratic, are more accurately described as 'kleptocracies -

polities ruled by thieves'. As controllers of state organisations corrupt rulers are in the position to borrow money from international financial institutions, negotiate trade agreements, and impose conditions for purchasing assets that discriminate in favour of themselves and their business partners (Keohane 1997). Indonesia during the Suharto regime and its activities in relation to forest exploitation is a prime example of this behaviour.

An alternative explanation of global liberalisation in some countries, therefore,

> lies not in government's conversion to a superior economic doctrine nor in pressure on them by interest groups to capture potential gains from exchange, but in recognition by elites that they can manipulate the terms of international exchange. Positioned at the nexus of the domestic and global political economies, such rulers control profitable international connections and skim off profits from the world economy (Keohane 1997 p.155).

In the case of Indonesia these profits were appropriated by the Suharto family and the military and ethnic elite. Internal security provisions implemented by the regime helped bring forested areas in the outlying provinces under direct control of the state and create a climate more favourable for investment by the international pulp and paper industry. Furthermore, the profits generated by the industry were vital in strengthening Suharto's power and credibility within the international arena.

8.3 Regulation of the Global Economy

The outcome of trade negotiations gives some perspective on power within the international trading system. The major achievement of the Uruguay round of GATT negotiations, beside agreement to establish the WTO, was the agreement concerning Trade Related Intellectual Property Rights (TRIPS). The agreement requires all signatories to the GATT agreement to take a greater role in enforcing existing rights, which are mostly held as patents by Multinational Corporations. The agreement also created new rights which will mean that patents are valid for longer, while certain new areas such as plant variety protection will now be subject to property rights, a matter which has increasingly concerned underdeveloped and developing countries (Holton 1998). The net effect of these agreements, according to Holton (1998 p.73), is to 'increase the price of information, a major concern for most countries outside the United States who are net importers of information'.

The United States was the main proponent of the TRIPS agreement. Concern by Transnational Corporations such as Microsoft, Pfizer and IBM over the pirating of their products and the associated loss of revenue influenced the American push for global agreements. Holton (1998) argues that this represents the successful deployment of US power to shift market rules in favour of TNCs. This also illustrates the point that while countries bring complaints to the WTO they usually do so at the behest of large corporations who have the greatest potential to benefit from international exchange.

Another outcome of trade negotiations informative of power relations involves the regulation of the global monetary and trading environment. 'This has been skewed towards the welfare of powerful economic interests, rather than being aimed at achieving social

justice or protection of the poor and defenceless' (Holton 1998 p.74). Transnationals have lobbied for trade to be regulated in such a way as to open up markets. However 'it has been far more difficult for underdeveloped countries to have regulatory arrangements put in place that protect them from the dumping of dangerous pharmaceuticals' (Holton 1998 p.74). The WTO supports free trade in commodities, which is helpful to those able to export products and services, it has however opposed the free movement of labour which would provide an important source of foreign earnings for many developing countries (Holton 1998). Similarly, the WTO has moved to protect patents across national boundaries but persistently refused to consider imposing minimum labour or environmental standards.

8.4 World Trade Organisation Power

The power that the WTO has over the environments of member nations and the global commons can be witnessed in the trade disputes documented in chapter seven. The Tuna-Dolphin, Reformulated Gasoline, Hormone Beef and Shrimp-Turtle precedents illustrate the way trade rules have constantly over-ridden measures designed to protect the environment at the national and international level. Countries have had to modify laws aimed specifically at addressing environmental problems. While the WTO cannot directly force a state to change its rules it can empower complainant countries to impose retaliatory sanctions. This illustrates one of the major power resources available to the WTO that is not available to most other international organisations and conventions to ensure compliance; the ability to impose financial sanctions. This power has been implemented to constantly uphold the preferences of the trading system at the expense of environmental legislation.

Power is also demonstrated when actors fail to pursue a claim because of fear or uncertainty concerning retaliatory action. Bachrach and Baratz (1970) argue that political systems develop a mobilisation of bias (a set of predominant values, beliefs, rituals and institutional procedures: the rules of the game) that operates systematically and consistently to the benefit of certain groups. The primary method of sustaining a given mobilisation of bias is non-decision making, which is described as: 'a means by which demands for change in the existing allocation of benefits and privileges in the community can be suffocated before they are even voiced; or kept covert; or killed before they gain access to the relevant decision making arena' (Bachrach and Baratz 1970 p.44).

Proposed environmental legislation globally has proved particularly vulnerable to the influence of the non-decision making power of the WTO and GATT. Many proposals to protect the environment have failed to reach the relevant decision making arenas because of uncertainty regarding their compatibility with trade rules. Issues related to the case study involving the eco-labelling of forest products, designed to provide consumers with information regarding the production processes used in timber manufacture are a prime example. In 1991 Austria enacted a law requiring labelling of tropical timber imports in an effort to use consumer pressure to improve timber harvesting practices. Malaysia promptly protested the measure under the Technical Barriers to Trade Agreement, arguing that it was a discriminatory non tariff barrier (Roht-Arriaza 1995). Beside issues regarding PPMs, the dispute also involved the fact that the measure was only applied to tropical timber and that there was no internationally agreed upon definition of sustainably harvested timber. No dispute panel settlement was ever convened, as faced with the threat of GATT action Austria rescinded the scheme.

The certification of forest products is regarded by many authors as an important catalyst for change in forestry management (Viana 1996). However the issue of compatibility with WTO rules is one that has continued to frustrate developments within the field of eco-labelling. Current consensus is that eco-labelling schemes do not transgress WTO guidelines provided they are voluntary, meet the WTO's strict transparency measures and are established by standardising bodies, such as the International Standards Organisation, which accept the relevant WTO guidelines (Liu 1996). The ability of individual countries to act has been severely curtailed in this regard and the implementation of timber certification programs delayed by the tortuous process of international negotiation.

8.5 The Power of Transnational Corporations

It is widely recognised that Transnational Corporations have been the greatest beneficiary of the freeing of international trade. The 1990s have seen an increase in the number and size of multinational corporations which, while usually based in the western hemisphere, conduct operations globally. These corporations control a large and growing percentage of the world's trade, to the extent that international trade can no longer be considered as occurring between countries but rather between and within companies. Investments by TNCs and private banks in the developing world have grown far more dramatically than national development aid or multilateral bank lending.

The growth in the number, size and influence of TNCs has been a matter of international concern, particularly amongst developing countries. In the early 1970s TNCs attracted considerable analysis. Critics argued that their expansion in the postwar period involved the

exploitation of the natural and human resources of developing countries. Ethical issues raised in studies concerning TNCs revolved around bribery and corruption, employment and personnel issues, marketing practices, impacts on the economy and development patterns of host countries, environmental and cultural impacts and political relations with both host and home country governments. It is frequently argued that TNCs have grown beyond the control of national governments and operate in an international legal and moral vacuum (Holton 1998).

TNCs control virtually every aspect of the global production and distribution process and are regarded as having a privileged position in liberal democratic societies (Lindblom 1977). As a result of the importance of corporate investment to economic growth and the provision of employment, corporate influence has traditionally been institutionalised in government decision-making structures. Companies and industries can and do threaten to withdraw investment or shift it to other countries with more favourable policy environments. Given the negative electoral outcomes associated with an investment strike or shift it is in the interests of governments to negotiate and consult extensively with corporate representatives on all matters which may affect them. Freeing of the international trading system has therefore vastly increased the relative power of corporations in regard to other actors within countries and in the international arena.

TNCs seeking to establish in an economically underdeveloped country may possess powerful negotiating abilities relative to that nation. If the TNC is seeking to exploit rare natural resources not available elsewhere then the negotiating position of the nation increases. When dealing with large transnational firms this is one of the few advantages

possessed by the underdeveloped countries. In general poorer nations are desperate for any economic development and as such offer the best possible conditions (Eels 1976).

A TNCs bargaining power depends on its size, the number of people it employs, its ability to move offshore and the state of the economy in the country in which it is seeking to exercise power. The power resources available to TNCs also depends on the degree to which they cooperate and present a consistent and cohesive political agenda (Beder 1997). Beside this structural power large corporations have many resources at their disposal. They can afford; their own global communications and intelligence networks and multi-million dollar public relations and advertising campaigns such as that mounted by Bob Hasan's group of companies in 1994 to improve public perceptions of forestry in Indonesia in influential markets and avoid consumer boycotts. They can afford to bolster the campaign coffers of favoured political candidates, teams of experts devoted to lobbying politicians or mounting legal challenges, and even in extreme cases to buy favour with public officials. More recently the resources of transnationals have been used to lobby governments to raise issues of concern at the WTO.

Concern over the possible consequences of the mobilisation of business power can also lead to outcomes favourable to TNCs. A report commissioned by the EC which was critical of the role of Transnational Timber Companies in tropical deforestation was suppressed for three years due to fear of business reprisals (Brown 2000). The report named companies prepared to offer inducements in order to win lucrative logging concessions. It described how donor countries have failed to enforce their own rules to promote forest conservation, and blamed the World Bank and IMF for making things worse by urging countries to sell

their forests for cash to repay debts. The report was eventually published with the names of all companies involved deleted (Brown 2000).

The political resources of large corporations have most often been mobilised in defence of what Lindblom (1977) terms the fundamentals of the politico-economic order:

> Large corporations in all the polyarchies approach a consensus on what we have called the grand issues of the politico-economic organisation: private enterprise, a high degree of corporate autonomy, protection of the status quo on the distribution of income and wealth, close consultation with business and government and restrictions of union demands to those consistent with business profitability, among others (Lindblom 1977 p.205).

Environmentalism challenges 'business as usual politics' more than any other social movement in the late twentieth century (Doyle 1998). Global environmental issues popularised during the 1980s such as ozone depletion, global warming, and the loss of biodiversity were initially regarded by the majority of the business community as a threat to their established ways of operation. Business worried that the harmful costs of economic activity associated with industrialism would ultimately serve as a line of reasoning to restrict growth, development and slow the deregulation of international economic activity (Finger and Kilcoyne 1997). The agenda of environmentalism posed and continues to pose a direct threat to many of the core values of the business system and as such has felt the full effects of the mobilisation of business power.

This was evident at the "Earth Summit" in Rio de Janeiro in 1992. Summit chairperson Maurice Strong directed Swiss billionaire Stephan Schmidheiny to provide the international business community's perspective on the environmental crisis. Schmidheiny recruited corporate leaders to form the Business Council for Sustainable Development (BCSD). The BCSD then employed Burson-Marsteller, the world's largest public relations firm, to represent them at the conference (Carothers 1993). Burson–Marsteller and other trade organisations, corporations and business groupings present in Rio made certain that the corporate position of voluntary rather than legislated reduction in toxic emissions and support for free trade as an environmental positive was prominent at the conference (Carothers 1993).

Conference outcomes were interpreted as largely favourable to business. Proposals supported by developing nations and environmental groups that called for monitoring, enforcement and penalties for the illegal transport of hazardous waste were defeated as was the biodiversity treaty. Schedules for reducing carbon dioxide emissions failed to achieve support. The United Nations Centre on Transnational Corporations (UNCTC) was unable to keep a formal code of corporate conduct on the agenda. The conference gave support to the Uruguay Round of the General Agreement on Tariffs and Trade despite environmental group opposition (Carothers 1993)

According to Karliner (1997), the Earth Summit marked the maturing of corporate environmentalism – the melding of ecological and economic concerns into a coherent ideology. This has allowed the transnationals to resolve in 'theory and rhetoric' their pursuit of profits and growth with the realities of environmental destruction (Karliner 1997). It is

widely accepted now that corporate environmentalism is more active than external activist environmentalism (Karliner 1997). The successful dissemination of the corporate environmentalism message has not only built a more positive public image of transnational corporations but also reframed much of the environmental discussion along lines favourable to their goals. As Karliner states:

> The emergence of corporate environmentalism as a force that is in some ways superseding the prerogative of the traditional environmental movement is a complex phenomenon. On the one hand, under pressure from community organizing and/or government regulation, the transnationals are instituting a number of real changes in their technologies and practices that are leading to cleaner production and less resource destruction in some locales. On the other hand, they have appropriated the language and images of ecology and sustainability in an effort to ward off the threat that the environmental movement might convince the world's governments to force them to make much more far reaching changes. Self-proclaimed corporate environmentalists achieved this by absorbing the question of ecological sustainability into their overriding agenda of economic globalisation. Suddenly, they have made the worldwide expansion of resource extraction, production, marketing and consumption synonymous with sustainable development. This deft manoeuvre has twisted the imperative to solve the environmental crisis into a justification for maintaining the status quo (Karliner 1997 p.2).

In the post Rio era the BCSD has grown to become the World Business Council for Sustainable Development (WBCSD). Its activities now focus on lobbying governments in developed and developing nations, the WTO, the International Standards Organisation (ISO), the World Bank and other fora. It prepares influential background documents and provides training for those identified as potential leaders (Finger and Kilcoyne 1997). These activities are undertaken to promote the conceptual framework that the market offers the best solution for global and environmental problems and that regulations are inefficient because they distort free trade. Thus by focussing a relatively small part of their vast resources on environmental issues global corporations have been able to reframe the debate in a manner more favourable to themselves and impact strongly on environmental outcomes.

Lukes (1977) suggests a typology of three dimensions of power. In addition to overt conflicts and the exclusion of issues from the political agenda, Lukes suggests a third domain in which power can be exercised. This is in the area of latent conflicts in which a contradiction between the interests of the powerful and the real interests of those they exclude exists. According to Lukes the supreme exercise of power is controlling the thoughts and desires of others. Central to Lukes concerns are exercises of power in which the subordinate agent does not even recognise that power has been exercised over them. Expanding the view of power to include this third dimension allows the exercise of power by those favouring international trade to be recognised. In many areas of trade and environmental conflict the role of trade is often not even recognised let alone debated. Trade is often percieved as a necessity rather than a choice and the voice of others suggesting an alternative way seldom heard.

8.6 International Trade and State Power

In recent years most states have been strongly influenced by the American period of hegemony and have adopted many fundamental elements of neoclassical economic theory, particularly those relating to trade. The opening of economic borders and the establishment of a global marketplace has been the great trend of the late twentieth century. Within countries, openness is considered self-reinforcing as it increases the economic strength and influence of those that favour it, and 'contagious because the openness of others creates more opportunities for gains from exchange' (Keohane 1997 p.169).

It is possible to document a range of recent outcomes of the trading system which have reduced the power of states over environments within their control. Membership of the WTO compels states to ensure that environmental legislation is trade compliant or face retaliatory sanctions. Subsidies to businesses and taxation regimes which can have significant environmental impacts must also pass the same test. Moreover, participation in the global economy governed by the WTO reduces a state's control over its borders and the import and export of goods and finance. National governments have been disciplined by international markets through currency depreciation and capital flight (Bell 1995). The loss of power over exchange rates and interest rates has restricted government's ability to increase taxes, particularly on business (*The Economist*, October 7 1995). This in practice reduces state policy options to those acceptable to international business. Countries wishing to implement environmentally progressive legislation such as full cost internalisation or a carbon tax are further hindered by the dictates of international competition. Individual nations wishing to pursue such policies would likely suffer short term financial loss despite

the long term environmental advantages. Hence there has been an increasing focus on seeking international solutions through treaties for perceived environmental threats.

However it is important to note that political impacts for states will vary according to the size of their home market and degree of exposure to the international trading system. Smaller states with open economies will be far more influenced by the dictates of international markets than large states. Krasner (1976) argues that as long as a hegemonic state's technological lead is increasing, its leadership will perceive economic advantages to openness as this will expand markets for the products of its technologically sophisticated industries. Hegemonic states will also gain politically, since the "opportunity costs of closure" will be low (because of the low ratios of foreign trade to production) relative to those facing smaller and poorer states. For Krasner the ability of large states to credibly threaten in an open economy to block international trade and investment confers to them the power to pursue economic or non economic objectives on the global stage. Large states not only benefit economically from openness, but they also gain politically. Thus the political and social incentives for openness are greater for large, relatively more developed states and the costs of such openness less. This is reflected in the fact that the sovereign powers that have most influenced the rules of the market system have been those with the largest markets (Steinberg 1998). Within the GATT/WTO forum the larger powers have used access to their markets to force and compensate lesser powers into accepting the rules of the system.

Variations in the capacity of nations to regulate cross border transactions are therefore an important variable when it comes to considering the political impact of international trade

on individual nations. The position of powerful players such as USA, Japan or Germany compares strikingly with the poorest nations (Holton 1998). While the wealthy nations have high levels of national capacity to regulate and exert considerable influence within transnational regulatory organisations such as the World Bank and the WTO, the latter group possesses very little bargaining strength or regulatory capacity.

Another reason for the differentiated political impact of international trade on nations is that some nations are the home base of TNCs. 'Profit made elsewhere may be expected to be repatriated to the country of corporate origin' (Holton 1998 p.83). Corporations have headquarters within a single nation, hold annual shareholder meetings within that nation and 'cultivate close relations with the governments of countries within which they are based' (Holton 1998 p.83). The strategy of most TNCs has not been to evade regulation in home countries but rather to utilise their power and influence to obtain a favourable regulatory environment and the support of governments for their global activities.

For the majority of states, participation in the global economy has reduced their policy choices. Yet the state remains the only institution with the necessary resources to provide large environmental management within countries. The case study reveals the enormous power of the Indonesian state to influence environments under its control through the establishment of favourable investment regimes, suppression of internal dissent and the provision of infrastructure. Regardless of the impact of international trade on its political instruments, the state retains the ability to implement national laws favourable to the environment, such as the establishment of reserves, to police existing laws, and to provide incentives for particular styles of development over others.

An expanding array of literature recognises that ecological balance precedes and is fundamental to economic management (Walker 1989). Despite this recognition indiscriminate growth remains official policy in nearly every nation (Walker 1989). 'The state's close intertwining with corporate interests, as well as the structural consequences of its own economic management strategies, limits its freedom to determine policy' (Walker 1989 p.32). States have tended to interpret their primary role as economic transformation by promoting capital accumulation. Furthermore 'small states may find their leverage acutely restricted when they rely on one or two crops or when the commanding heights of their economy are dominated by multinational corporations with significant bargaining power of their own' (Walker 1989 p33). This in turn affects the degree of freedom states have to attend to ecological problems, particularly in times of economic crisis. As Walker states: 'posterity is a poor second to political survival or economic indicators' (1989 p.33).

8.7 Individual Power in an Integrated Trading System

Similar to state power, the power of individuals within an expanding free trade system varies greatly. If it is accepted that corporations hold power because of their control over productive assets and the ability to shift investments across the globe, then the same must be said for some wealthy individuals and stockholders who can promote or frustrate sustainable development through their investment activities. Individual capitalists have the option not just of which companies and industries to favour with their investments but also which country.

One of the claims made by proponents of free markets is that individuals through their buying power can influence the behaviour of corporations and countries in terms of their environmental performance. Thus by choosing to buy certain products because of their perceived "environmental friendliness" consumers can help promote a movement toward sustainable development. A choice of globally produced products should only add to this power as the limitation of domestic production is bypassed and incentives for sustainable global production provided. The belief in consumer power is often characterised as a democratic tendency of markets; in effect consumers can vote through their purchasing preferences. While the principle of one person, one vote is the foundation of political democracy, the market inevitably functions according to the 'principle of one dollar, one vote. Among people of reasonably equal wealth, each person has a more or less equal number of votes and the market may rightly be considered democratic' (Korten 1997 p.9). The more unequal the distribution of wealth, the less democratic the market. When global inequality becomes extreme, as evidenced in chapter six of this thesis, then the 'free market becomes for the poor an instrument of tyranny that systematically deprives them of the most fundamental of all human rights – the rights to a means of living – literally the right to live' (Korten 1997 p.9). The United Nations Development Program Report argues: 'if present trends continue, economic disparities between industrial and developing nations will move from inequitable to inhuman' (1996 p.1).

Within the international market the majority of people have limited influence as they have limited financial assets. The poorest two fifths of humanity survive on incomes of less than three US dollars per day (Myers 1997). Moreover, the divide between rich and poor is growing. In a market system there are few incentives to produce technologies applicable to

the needs of the poor or to preserve the ecosystems that they rely on as they exert little market power despite their numbers. Evidence for this position can be found by contrasting the number of lifestyle products invented and produced for wealthy consumers compared to those for the basic needs of the poor. The case study illustrates the way paper intended mainly for wealthy computer users has been produced at the expense of indigenous populations. This is indicative of the market system's inevitable bias towards the needs and desires of the wealthy consumer.

8.8 Conclusion

The emergence of a global marketplace has consolidated the power of the WTO, large states, TNCs and wealthy individuals. Rulings by the WTO have cemented their power position over environmental outcomes and constrained the policy options of most states. States with the capacity to credibly threaten the conduct of open-trade, resist financial sanctions and influence transnational regulatory organisations such as the WTO have increased their power. Faced with the expanded power of these groups the relative power of small states has been eroded.

Environmental outcomes are closely related to the institutionalised pressure for continued economic growth and the power resources of bodies pursuing such a goal. The situation described in the case study with those who buy and sell in distant international markets having more control over industries which have tremendous environmental impact, than local people most affected by their operations, is broadly applicable in many other contexts.

TNCs hold a privileged position within a capitalist economy and the reduction in border controls has increased their power capabilities. The potential of business power can be witnessed at the Earth Summit and in subsequent developments. TNCs champion the principle that economic growth, now synonymous with sustainable development, is the only acceptable solution to global environmental problems, and that to maximise the pace of this process, international trade has to take precedence. Nation states that in the main regard their primary role as facilitating the process of capital accumulation have been willing acceptors of this message.

-9-

Conclusion

9.1 Introduction

Extrapolating current trends in environmental deterioration into the near future in terms of global warming, biodiversity, desertification and deforestation indicates that current approaches are seriously flawed and that remedial action must be taken sooner rather than later. This chapter makes several conclusions regarding the environmental impact of international trade and argues that far from being neutral or promoting environmental solutions in the main, trade as it is currently practiced is highly detrimental to environmental outcomes. This concluding chapter therefore identifies ways in which the international trading system can be reformulated to reduce this impact.

9.2 The Strategic Vision of Rio Revisited

At the 1992 United Conference on the environment held in Rio de Janeiro the nations of the world established an agenda for sustainability that included the goal of sustainable development via liberalised trade. This position, championed by many of the most powerful

global institutions and companies, draws much of its intellectual rigour from a long and distinguished line of classical economists beginning with Adam Smith and David Ricardo. Updated and expanded to include environmental concerns, it represents the current economic orthodoxy. However in terms of its environmental prescriptions it is fundamentally flawed. The freeing of trade in the years since the Rio summit has provided little evidence to support the orthodox position and much to refute it.

While this position promotes the vision of an integrated global marketplace, many of its environmental precepts inevitability rest on the assumption of meaningful international borders. Promoted by technological advancement and championed by hegemonic powers and their associated agencies, the great trend at the end of the twentieth century and at the start of the twenty-first is a continual increase in the permeability of borders to capital, companies, goods and to a lesser extent people. While individual states are supposed to be able to set the parameters for environmental performance their ability to do so is severely curtailed by considerations of international competitiveness. This effect is greater for states with poorer economies, those dependent on one or two major industries or with high levels of multinational involvement. Similarly, the ability of capital to cross national borders impels business to ever greater growth and profit under threat of being punished and bankrupted by international markets. Worldwide capital mobility creates the situation where states, companies and investments are rewarded or penalised almost instantly by a network of technocrats and money managers who shift billions of dollars per day. The possibility of individual countries or companies implementing policies beneficial to the environment but detrimental to profit growth in such a system are diminished. Far more plausible is the same

institutions seeking to reduce the existing and potential barriers to growth and profit in order to attract capital and investment.

The orthodox sustainable development prescription which sees growth maximisation as necessary for countries to build the wealth and capacity to afford measures compatible with environmental protection means that international investment need pay little attention to policy conditions within countries. This is because of the belief that their wealth creating activities will help create the economic conditions, such as higher individual incomes, necessary for a shift toward the luxury of sustainable production. While global economic growth spurred by expanding international trade has certainly occurred in the post Rio decade, it has done little to shift the economy toward sustainability and impeded many worthy initiatives. States have not fulfilled the second part of the Rio bargain to enact appropriate environmental legislation within their boundaries and many poorer nations continue to lack the resources necessary to develop the capacity to do so.

Evidence from the case study concerning the expansion of the pulp and paper industry in Indonesia is informative in relation to this position. International investment and the involvement of multinational corporations have been vital components in the establishment of the industry, providing access to capital, technology and distribution networks. Working in joint venture partnerships with Indonesian capitalists with the necessary internal political contacts to secure access to the forest resources, they have encouraged a massive over-capacity within the industry. The associated failure of plantation establishment and the massive debt levels of the companies involved provide a powerful spur for the continued exploitation of natural forests. Pulp and paper expansion within Indonesia has impacted

heavily on the environment with massive deforestation, forest fires, biodiversity loss and the destruction of traditional economies and societies being some of the most prominent consequences. Multinational involvement has led to the plunder of resources which have been repatriated to richer nations. Profits generated by the industry within Indonesia have in the main been appropriated by a predatory elite and used to shore up its power base rather than used to improve environmental outcomes. Moreover, expansion of the pulp and paper industry has helped transform formerly national firms into international conglomerates. The profits generated through unsustainable practices in Indonesia have powered an international expansion with many of the same destructive practices being exported to other countries. Unsustainable practices have allowed the industry to produce pulp cheaply and in massive quantities which effectively out-competes other producers with less destructive practices and even recycling schemes. Given the evidence from the case study it is possible to conclude that trade has unleashed global economic forces which systematically punish ecologically sound forestry while rewarding destructive practices that accelerate forest degradation. Through the process of economic integration involving trade, unsustainable activities in one part of the world can impact detrimentally on activities elsewhere and undermine moves toward less destructive production methods.

9.3 Environmental Control in a Trading World

International trade increases the spatial distance between ecologically destructive production and the end point of usage, as in the case of paper produced in Indonesia and consumed in wealthy nations. Individual consumers of such products seldom have the opportunity to witness first hand or suffer the direct consequences of the destructive outcomes of their consumptive behaviour. In a market system power is closely related to wealth and the case

study illustrates the way in which those who trade and invest in distant markets have more capacity to control industries with serious environmental impact than have the local people most affected by their operation.

Those who argue that trade is neutral or positive for the environment often fail to recognise how it affects political and economic structures within countries by adding to the resources available to some groups while diminishing others. Moreover, they also fail to recognise how the environmental preferences of wealthy corporations and consumers often take precedence over others with less resources and the extent to which the affluence of wealthy countries is the result of the long term exploitation of the resources of poorer nations. The comparative advantage of nations in the modern world is not the outcome of natural law but rather the historical product of the uses of political and economic power.

International trade is the conduit through which many countries obtain the resources necessary for continued economic expansion beyond immediate geographic constraints. Inequitable trading relationships have allowed some countries to preserve and even improve their environments by shifting the burden of unsustainable production to others through trade. The ecological shadow cast by any country includes the price paid for resources, their source, the amount consumed and the effects of consumption on government actions and corporate practices. In terms of the case study, Japan and other wealthy nations have cast the greatest ecological shadow by encouraging a massive overexploitation of resources. One of the benefits of an open trading system is that it can result in the spread of new technologies, which in general are likely to be less polluting than the old. The World Bank has heavily promoted this particular benefit of open trade and used the adoption of ECF pulping

processes by Indonesian manufacturers as evidence. However, associated with the adoption of this technology has been a massive expansion in the industry which has overwhelmed any potential benefit.

International trade as it is currently practiced is a powerful homogenising influence. Specialisation in line with the concept of comparative advantage is promoted within countries at the expense of economic diversity. The case study illustrates the way trade has influenced the replacement of ecologically diverse rainforest with monoculture plantations, small-scale low impact forest product collection industries with large international forestry conglomerates and traditional indigenous culture with western market values. Trade routes themselves contribute to biological homogenisation by providing a conduit for exotic species to infiltrate new environments. Thus while one potential benefit of trade is an increase in choices for consumers, it is achieved at the expense of economic, ecological and cultural diversity.

The globally integrated economic system has also allowed the shifting of environmental problems to remote areas. The dismantling of northern pulp lines after forest accessibility was curtailed, and their reassembly in the rainforests of Indonesia, where protests by indigenous groups and international environmental organisations were largely ineffectual, is an obvious manifestation of this trend. International trade and sustainable development are growth-based ideologies and by their nature require access to ever more resources. Trade rules which limit the power of states to control capital movements and increase the relative influence of international markets and multinational corporations expose natural environments to constant pressure for continued or greater exploitation. The prime concern

of corporations and often compliant governments is not to help the poor or protect the environment but capital accumulation, which, as in the case study, is often closely related to the over-exploitation of raw materials.

9.4 The Environmental Vision of the World Trade Organisation

The criticisms and protests directed at the World Trade Organisation are to an extent reflective of the WTO's success in freeing trade and the associated environmental costs involved with this process. It is has sought to fulfil its original charter which is to establish a single and essentially private sector global market unencumbered by border tariffs, quotas or government subsidies in the belief that this will facilitate international competition between corporations leading to global economic growth and development. Yet the single-minded pursuit of this goal has had significant environmental impact. Environmental legislation has proved particularly vulnerable to WTO rulings and a significant regulatory chill in terms of the environment can be identified. The position of the WTO in regards to the environmental impacts of trade has shifted minimally since work began on this thesis. In the formative period of the organisation the belief that growth would cure all was the dominant position, however a report released by the organisation late in 1999 provides a more moderate perspective.

A press release describing a WTO commissioned report *Trade and the Environment*, authored by Nordstrom and Vaughan (1999), argues that trade 'is rarely the root cause of environmental degradation, except for the pollution associated with the transportation of goods' (WTO 1999 p.2). Rather it is 'polluting production processes, certain kinds of consumption and the disposal of waste products' which give rise to environmental problems

(WTO 1999 p.2). Processes degrading to the environment occur, according to this analysis, 'because producers and consumers are not always required to pay the costs of their actions' (WTO 1999 p.2). Subsidies and other policy failures contribute to environmental decline. International trade, it is argued, 'would unambiguously raise welfare if the proper environmental policies were in place' (WTO 1999 p.2). Therefore the press release argues full cost internalisation and an end to subsidies are required and gives full support to the reports conclusion which states:

> In short, trade is really not the issue, nor is economic growth. The issue is how to reinvent environmental policies in an ever more integrated world economy so as to ensure we live within ecological limits. The way forward, it would seem to us, is to strengthen the mechanisms and institutions for multilateral cooperation, just like countries 50 years ago decided that it was to their benefit to cooperate on trade matters (Nordstrom and Vaughan 1999 quoted in WTO Press Release, October 8 1999 p.10).

The need for such an institution as an antidote to the power of the WTO has been described in this thesis. Despite a clear need, the establishment of a new organisation to oversee global environmental issues is problematic. It must be remembered that it took approximately fifty years for the WTO to become a fully fledged body recognised by international law. Even with the clear support of a hegemonic power and a great deal of goodwill, long and tortuous negotiations were required. Similar if not greater difficulties are likely to face an inevitably more controversial environmental body and the time frame of establishment might be decades unless governments suddenly show a great deal more commitment to solving

environmental issues than is currently the case. Many environmental problems require immediate action. Tropical deforestation in Indonesia for example is rapidly expanding to the extent that dry lowland forest is expected to vanish from Sumatra by 2005 and on Kalimantan by 2010. Immediate action is required in many environmental areas or there will be little left to protect.

Proposals for full cost internalisation and an end to subsidies also present difficulties. Full cost internalisation would radically restructure patterns of international trade and dramatically reduce its volume. Trade is primarily based on the use of fossil fuels and an increase in the fuel price in line with full cost internalisation would reduce the profitability of long distance trade. While the environmental benefits of this change would be substantial it is likely to face concerted resistance. Many aspects of the current economy derive competitive advantage by failing to incorporate environmental externalities into economic pricing. Moreover, the ability for any country to act alone in implementing full cost internalisation is limited as it would merely amplify the fact that trade between countries with different cost internalising regimes is unfair.

While ending subsidies in a variety of fields will do much to improve the environment, the long term effect of subsidies needs to be recognised. Economic and environmental subsidies have strongly influenced the development of current economic, industrial and trading patterns. Countries and corporations which have benefited from previous subsidies have used them to develop economies of scale, market dominance, wealth and political power. Corporations identified in the case study have received a variety of economic and ecological subsidies to encourage the establishment of a high volume, low cost pulp and paper industry

and have entrenched themselves in the international market. New industrial processes which are arguably more sustainable and less impacting on the environment, such as growing kenaf for pulp, must overcome the artificially low prices achieved by other producers to achieve market share and be viable. The benefits of subsidies which have accrued to certain corporations may give them a competitive advantage which remains after the subsidy ceases and will help to maintain the status quo. The issue should therefore be not a complete end to subsidies but rather their reorientation towards more sustainable industries and technology.

9.5 Issues in Reformulating the World Economic System

The global environment continues to decline and trade as it is currently practiced contributes significantly to the acceleration of this process. Proposals put forward by the WTO are unlikely to make a significant difference in the short term as a global environmental organisation with legislative powers comparable to the WTO and able to encourage full cost internalisation and an end to subsidies is likely to take decades to emerge. Despite objections from purists within the trade community, trade measures offer a powerful instrument to change current practices to encourage sustainability. While most economists argue against the idea of a managed trade system, it should be recognised that the

> world's trade.... is closely regulated by an extensive system of agreements and organisations such as the General Agreement on Trade and Tariffs, the International Monetary Fund and the World Trade Organisation that rule over a host of highly complex issues such as patent protection, the management of capital flows and the handling of balance of payment problems (Prasch 1999 p.411).

Thus the idea that government plays a small and decreasing role in regulating the global economy should be reconsidered (Prasch 1999). The shape of the current trading system is the outcome of the uses of hegemonic power and therefore the conscious redesign of the world's trading system is 'neither a new or radical idea' (Prasch 1999 p.418). Economic management of the global trading system is increasing and not decreasing. Once it is recognised that the 'modern world trading system is already being managed' (Prasch p.418), the question of how it can be managed to improve environmental and social equity outcomes and how trade rules can be made to operate so that they encourage diversity in culture, environments and countries can be addressed.

World Trade Organisation rules which do not allow countries to discriminate against imported products on the basis of how they were produced must be modified. Countries should be allowed to discriminate against imported products which are produced in a clearly unsustainable manner or significantly threaten global ecological diversity. Trade proponents who reject this option argue that environmental barriers will be used to discriminate unjustly against countries. However, with clearly established guidelines, including a notification period, a right of appeal and targeted aid, such a change would do much to encourage sustainable practices. This approach recognises that international market access can provide a powerful spur to change behaviour. This is in sharp contrast to the current approach toward trade which offers little incentive for countries to modify their behaviour as their products will be accepted within international markets regardless of the environmental degradation which occurs through their manufacture. Such a change would widen the scope of the concept of comparative advantage away from its narrow focus on economic efficiency

to include notions of sustainability. It would also encourage countries to cast positive ecological shadows through trade by encouraging them to discriminate against goods on the basis of how they are produced. The suggested modification to trade rules would also involve widening the narrow focus of the World Trade Organisation so it is in the position to measure the appropriateness of discriminatory measures. Rather than being an organisation closed to the public and dominated by lawyers, who have usually made careers from representing corporate clients, the WTO should broaden its intellectual base to represent a variety of views. This might also lead the WTO to take a more pro-active approach in terms of environmental issues and state what is allowable, rather than frustrating efforts by constantly rejecting environmental legislation.

Massive capital flows such as those that destabilised the Indonesian economy in the late 1990s have tremendous environmental impact and indicate that measures to reduce the role of short term portfolio investment in the international economy are required. A tax on foreign exchange transactions is the most often suggested remedy. This policy draws on basic economic theory which argues that the more something costs, the less there will be of it (Prasch 1999).

> A modest turnover tax will theoretically slow down the speculative movement of portfolio capital while trimming its volume. Proponents argue that such a tax will induce financial speculators to pay more attention to fundamentals and less to anticipating minor movements in the relative prices of various currencies (Prasch 1999 p.412).

Operating in conjunction with policies designed to control the volume of capital flows a transaction tax on foreign exchange could contribute to the stabilisation of the foreign exchange markets and promote orderly development of the real economy, recognised as necessary within virtually all conceptions of sustainability.

Most capital flows between the developed industrial nations of the world and therefore the majority of revenue raised by the tax would be contributed by wealthy nations. It could be argued that as the world's tradeable produce draws heavily on its ecological capital and current practices in no way reflect full cost pricing, revenue raised by the tax should be used for environmental purposes. Radical developments need to be initiated in the global economy and one of the most obvious ways to achieve this is to initiate a series of ecological subsidies which would encourage the establishment of new industries whose tradeable produce is more sustainable than current practices. The massive debt held by many nations is also a trade issue as its existence forces countries to suffer inequitable trading relationships and is closely related to the overexploitation of resources. Therefore revenue raised from a tax on foreign exchange could be partially used to fund debt relief.

The role and influence of trade in economic and environmental issues is increasing and not decreasing. The new trading frontiers linked to agreements such as the Kyoto protocol involve trading the rights to emit greenhouse gas emissions across international boundaries. The use of 1990 emission levels as a baseline for determining a country's initial trading allocation in the Kyoto protocol is inherently inequitable at the global level and rewards those who have polluted the most in the past. If emission trading schemes are to be allowed then calculating country emission allocations on a per head of population basis would seem

more equitable and provide a conduit for resources to flow to the poorer and more populous nations.

Transnational corporations dominate international trade and the agenda of trade reform. In the mid 1990s the United Nations, for a variety of reasons, abandoned a fifteen year effort to produce a Code of Conduct for Transnational Corporations. Efforts at the global level should be reinvigorated to help balance the growing power of such corporations relative to those of nations and individuals. Home and host countries should seek to impose measures which ensure that companies operating across international borders meet minimum environmental standards, pay appropriate levels of taxation, undertake full disclosure environmental reporting and take some account of differentials between standards in home and host countries. A licensing system for Transnational Corporations would provide a powerful instrument to ensure compliance and the process of meeting licence conditions, reapplying periodically for licences and the ability of states to revoke licences would do much to redress the power imbalance.

These suggested changes do not detract from the fact illustrated in the case study that international trade based development models as they are currently practiced are fundamentally problematic as they involve indiscriminate integration into the global economy and an over-reliance on foreign markets and investment. In comparison, domestic economic development seems far more likely to meet the needs of citizens and encourage self-sufficiency and sustainability, though a detailed investigation of this process is beyond the scope of this thesis.

9.6 Conclusion

Adoption of a political ecology approach has broadened the understanding of the environmental impacts associated with international trade. In contrast to the mainstream sustainable development approach, political ecology reveals that the environmental problems of poorer nations such as Indonesia are not just the outcome of domestic policy failure, but rather a manifestation of broader political and economic forces associated with the global spread of capitalism and trade. The approach highlights that the assumptions made by mainstream sustainable development regarding the positive environmental benefits of trade are not justifiable and that the significant environmental costs of expanding trade are not equally shared. Expanding international trade has significant political ramifications as it substantially increases the relative power of wealthy states, markets, corporations and individuals while at the same time diminishing the capacity of others to protect resources or set the environmental agenda through economic policy. The case study and other discussions have illustrated the way power has manifested itself in gaining access to the environmental resources important in international trade. The present conduct of international trade is incompatible with the goals of sustainable development and changes such as a modification of trade rules to allow countries to discriminate against goods on the basis of how they were produced are urgently needed.

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Appendix 1

The Rio Declaration on Environment and Development

Principle 1

Human beings are at the centre of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

Principle 2

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and development policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.

Principle 3

The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

Principle 4

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

Principle 5

All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of people of the world.

Principle 6

The special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable, shall be given special priority. International actions in the field of environment and development should also address the interests and needs of all countries.

Principle 7

States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

Principle 8

To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.

Principle 9

States should cooperate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

Principle 10

Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

Principle 11

States shall enact effective environmental legislation. Environmental standards, management objectives and priorities should reflect the environmental and development context to which they apply. Standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries.

Principle 12

States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be

avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.

Principle 13

States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

Principle 14

States should effectively cooperate to discourage or prevent the relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health.

Principle 15

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Principle 16

National authorities should endeavour to promote the internalization of economic costs and the use of economic instruments, taking into account the approach that the polluter should,

in principle, bear the cost of pollution with due regard to the public interest and without distorting international trade and investment.

Principle 17

Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

Principle 18

States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States. Every effort shall be made by the international community to help States so afflicted.

Principle 19

States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.

Principle 20

Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development.

Principle 21

The creativity, ideals and courage of the youth of the world should be mobilized to forge a global partnership in order to achieve sustainable development and ensure a better future for all.

Principle 22

Indigenous people and their communities and other local communities have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development.

Principle 23

The environment and natural resources of people under oppression, domination and occupation shall be protected.

Principle 24

Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.

Principle 25

Peace, development and environmental protection are interdependent and indivisible.

Principle 26

States shall resolve all their environmental disputes peacefully and by appropriate means in accordance with the charter of the United Nations.

Principle 27

States and people shall cooperate in good faith and in a spirit of partnership in the fulfilment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development.

Source: United Nations Conference on Environment and Development (1992) *Agenda 21: Program of Action for Sustainable Development*, United Nations New York, pp 9-11.

Appendix 2

Ricardo's example of the cost of wine and cloth in England and Portugal

	For the production of	
	x barrels of wine	y yards of cloth
	Required total number of man days	
Portugal	80	90
England	120	100

Under these circumstances it will pay Portugal to specialise in the production of wine for exports, and England to specialise in the production of cloth for exports, although both wine and cloth are produced in Portugal with smaller expenditure of labour than in England. Portugal will exchange x barrels of wine for y yards of English cloth, because Portugal will thus get y yards of English cloth for the quantity of wine which represents the equivalent of 80 man days, while if she produced this cloth herself she would have to expand 90 man days. By trade with England, Portugal saves 10 man days for every y yards of cloth imported from England, and at the same time enables England to procure x barrels of wine at a cost of only 100 man days, which England requires for the production of y yards of cloth, while she

would have required 120 man days to produce the wine herself. England has therefore saved 20 man days on imported wine although she expends 10 man days more for each *y* yards of cloth than if Portugal produced the cloth.

The comparative advantage which accrues to Portugal when she exports wine and imports cloth, or which England has when she exports cloth and imports wine, is based on the limited mobility of factors of production. Due to this it is possible in foreign trade to exchange the labour of 100 Englishmen for the labour of 80 Portuguese. In internal trade this would be impossible, because any attempt to exchange the labour of 100 Englishmen in one part of England for the labour of 80 Englishmen in another part of the same country would soon lead to the end of the production which requires at the same market valuation, the labour of 20 more men. Labour and capital would soon leave the production where 20 more Englishmen are needed for the same result and look for employment where 20 less men are required. Labour will get higher wages there and capital bigger profits.

Reproduced from: Sraffa (1951) *The Works and Correspondence of David Ricardo*, Cambridge University Press, Cambridge p.136.